Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 5,7 e

1. Edition

En

PES 6 A 75 D 410/3 RS 1197
Komb.-Nr. 0 400 466 045

RSV 325-1150 A8B 494-1 L

supersedes
company KHD
engine F 6 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,5+0,1	4,4-4,5	0,2(0,35)			
325	8,4-8,6	0,8-1,4	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-,0,7		ca. 18	325	8,0	1130	10,5-10,6
	x = 4,8						500	11,5-11,6
					100	min.19,5	930	10,9-11,1
ca. 51	9,5	1170-1180			325	8,4-8,6		
(2a)	4,0	1220-1250			455-515	=2,0		
	1385	0,3-1,4						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	43,5-44,5 (42,0-46,0)	1170-1180*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

A1

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MWM 3,9 b 2

1. Edition

En

PES 4 A 80 D 320 RS 1282 RSV 350-1100 A 2 B 2129-6 R

Komb.-Nr. 9 400 085 257

supersedes -

company MWM

engine D 229-4

1 681 413 413

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	8,7+0,1	4,9-5,0	0,25(0,4)			
350	6,4-6,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0		-	-	-	ca.21	350	6,0	1100	8,7-8,8
	x = 4,25						100	min.19,0	500	10,0-10,1
							350	6,4-6,6	900	9,1-9,4
ca.44	7,7 1140-1150						590-650	= 2,0		
(2a)	4,0 1180-1210									
	1300 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	48,5-49,5 (47,0-51,0)	1140-1150*	500	50,0-52,0 (48,0-54,0)	100	19,0-21,0 mm RW	-	-
			900	49.0-51,0 (47.0-53,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

A2

12

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 1 g 17

2. Edition

En

PES 4 A 80 D 410/3 RS 1300 RSV 325-1175 A 8 C 657-1 L

Komb.-Nr. 0 400 464 129

supersedes 5.85
company KHD
engine F 4 L 912
tractor DX 3.70

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175	10,8+0,1	5,8-5,9	0,25(0,4)			
325	8,4-8,6	1,1-1,7	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
oose	800	0,3-1,0	-	-	-	ca. 17	325	8,0	1175	10,8-10,9
	X = 4,0						325	8,4-8,6	500	11,5-11,6
ca. 51	9,8	1215-1225					445-505	=2,0	1025	11,1-11,3
(2a)	4,0	1260-1290								
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
175	58,0-59,0 (56,5-60,5)	1215-1225*	800	56,0-58,0 (54,0-60,0)	100	120,0-130,0 (117,0-133,0) =19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A3

A3

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 n 13

1. Edition

PES 6 A 90 D 410 RS 2293 En
Komb.-Nr. 9 407 083 270

RQV 300-1425 AB 740-1 L

supersedes
company Daimler-Benz
engine OM 352
118 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,0+0,1	7,1-7,2	0,3(0,5)			
300	7,4-7,6	1,0-1,6	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca. 14 (3a)	100	min.9,0	250	0,5-0,7
							300	7,4-7,6	640	3,2-3,6
ca. 58	10,0	1400-1410					800	max.1,0	1035	5,6-5,8
	4,0	1520-1555							1425	8,2
	1660	0-1,0								

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1380	71,0-72,0 (69,5-73,5)	1400-1410*	500	54,0-56,0 (52,0-58,0)	100	71,0-81,0 =13,7-14,1 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

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A4

Testoil-ISO 4113

PES 6 A 85 D 410/3 RS 2415 RQ 300/1250 AB 935 DL
Komb.-Nr. 0 400 856 024

supersedes 9.85
company: KHD
engine: BF 6 L 913 T
96 kW
2500 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,1+0,1	8,0 - 8,1	0,3(0,45)			
300	8,3-8,5	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
800	19,2-20,8	800	20,0	11,1	1295-1310	300	8,4	100	min. 9,8	1250	12,1-12,2
VH =	max. 46°			4,0	1370-1400			300	8,3-8,5	800	13,3-13,4
				1500	0 - 1,0			570-610	=2,0	910	13,0-13,2
										1050	12,4-12,7

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation. At 1295-1310 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1250	80,0 - 81,0 (78,0 - 83,0)	-	800	85,0-87,0 (82,5-89,5)	100	105,0-115,0 (102,0-118,0)

Checking values in brackets

11.85

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MAN 9,2 a 3

1. Edition

En

PES 5 A 95 D 410 LS 2426 RQV 250-1150 AB 850 DL

Komb.-Nr. 0 400 845 013 = MAN-Nr. 1-7619

1 - 3 - 5 - 4 - 2 je 72° ± 0,5° (± 0,75°)

supersedes

company MAN

engine D 2555 MX/MXF
141 kW/2300 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,3-1,4 (1,25-1,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 50	1170	14,4-17,4	-	-	-	ca. 13	50	7,7-11,0	200	0,5-1,2
	1220	9,0-14,0					150	6,6- 9,8	480	3,2-4,0
	1280	1,0- 7,8					250	4,2- 7,2	800	5,0-5,4
	1350	0					350	0 - 3,4	1180	8,4
							410	0		

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a): rev/min (5b) 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
					100	146,5-156,5	1100	-
1150	114,5-116,5 (112,5-118,5	1190-1205*	800	114,0-117,0 (112,0-119,0)				
			500	max. 113,5 (max. 115,5)	250	7 mm RW Change-over point 180-100 min^{-1}	500	0,3-0,5

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

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Test Specifications Fuel Injection Pumps ① and Governors

PES 5 A 95 D 410 LS 2426 Z RQV 250-1150 AB 850 DL

Komb.-Nr. 0 400 845 021 = MAN-Nr. 1-7555

1 - 3 - 5 - 4 - 2 je 72° ± 0,5° (± 0,75°)

supersedes–
company: MAN
engine: D 2555 M/MF
124 kW/2300 min^{-1}

Testing data

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,3-1,4 (1,25-1,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 50	1170	14,4-17,4	-	-	-	ca. 15	50	7,7-11,0	200	0,5-1,2
	1120	9,0-14,0					150	6,6- 9,8	480	3,2-4,0
	1280	1,0- 7,8					250	4,2- 7,2	800	5,0-5,4
	1350	0					350	0 - 3,4	1180	8,4
							410	0		
						(3a)				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1150	109,5-111,5 (107,5-113,5)	1190-1205*	800	112,0-115,0 (110,0-117,0)	100	146,5-156,5 =15,7-16,3 mm RW	1100	0
			500	max. 112,5 (max. 114,5)	250	7 mm RW Change-over point 180-100 min^{-1}	500	0,3-0,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 b
3. Edition
En

Testoil-ISO 4113

PE 10 A 95 D 610/4 LS 2452 RQV 300-1250 AB 1129 L

Komb.-Nr. 0 400 649 223

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2

0 - 27-72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 4.85
company: KHD
engine: F 10 L 413 F
228 kW (310 PS)
2500 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,3+0,1	9,1 - 9,3	0,3(0,6)			
300	6,4-6,6	1,2 - 1,6	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1380	15,2-17,8	-	-	-	ca. 18	100	min.8,0	300	1,2-1,3
							300	6,4-6,6	500	2,6-2,9
ca.51	9,3	1290-1300							1000	5,4-5,6
	4,0	1375-1405							1300	7,7-7,8
	1500	0 - 1,0							1380	8,7

Torque control travel a = 0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed: rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	90,5 - 92,5 (88,5 - 94,5)	1290-1300 *	800	90,0 - 93,0 (88,0 - 95,0)	100	120,0 - 130,0 (117,0-133,0)	1250	10,3+0,1
							500	10,5+0,1
							940	10,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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A8

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6,1 e 2

1. Edition

En

PES 6 A 95 D 410 RS 2471 RSV 325-1400 A2C 2205 L
Komb.-Nr. 0 400 876 330

supersedes –
company KHD
engine BF 6 L 913 C
125,0 kW

Test-Nr. 0 413

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,9+0,1	8,8-9,0	0,35(0,6)			
325	7,5-7,7	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	325	7,1	1400	10,9-11,0
	x = 4,0						100	min.19,5	500	10,9-11,1
							325	7,5-7,7		
ca. 58	9,9	1440-1450					625-685	=2,0		
(2a)	4,0	1545-1575								
	1675	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar		LDA	0,7 bar	100	115,0-125,0		
1400	88,0-90,0		850	78,5-81,5		(112,0-128,0)		
	(86,0-92,0)			(76,0-84,0)		= 15,6-16,0		
			LDA	0 bar		mm RW		
			650	64,0-66,0				
				(62,0-68,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

A9

A9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
PES 6 A..RS 2471 + A2C 2205 L	0,7	0 0,22 0,18	10,9-11,1 10,2-10,3 10,7-10,8 10,5-10,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WWP 001/4 MAN 9,2 f 1
2. Edition
En

PES 5 A 95 D 320 LS 2504 RQ 250/1100 AB 1197 R
Komb.-Nr. 0 400 845 079

1-3-5-4-2 je 72° ± 0,5° (± 0,75°)

supersedes 2.85
company: MAN
engine: D 2565 MUL
141 kW/2200 min^{-1}
MAN-Nr. 2-7500

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 -1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 100	11,3+0,1	11,4-11,6	0,3(0,6)			
250	6,4-6,6	1,5-2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,3	1145-1160	250	6,5	100	min. 8,0	1100	11,3-11,4
				4,0	1195-1225			250	6,4-6,6	600	11,7-11,8
				1300	0-1,0			370	410=2,0	940	11,5-11,7
										1015	11,4-11,6

Torque-control travel on flyweight assembly dimension a = 0,40 mm

Speed regulation: At 1145-1160 min -1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1100	114,0-116,0 (112,0-118,0)	-	800	115,5-118,5 (113,0-121,0)	100	147,0-157,0 (144,0-160,0) = 13,7-14,3 mm RW
			500	113,0-116,0 (110,5-118,5)	250	6,5 mm RW

Checking values in brackets

11.85

A11

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 c 2

1. Edition

En

PES 6 A 95 D 410 RS 2522 US-EP/RSV 400-1100 A2B 2055 DL supersedes
Komb.-Nr. 9 400 230 014

company John Deere
engine 6466 T

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,85-1,95 (1,80-2,00) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,5+0,1	10,1-10,3	0,3 (0,6)			
400	5,9-6,1	1,2-1,6	0,4 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	400	5,5	1100	10,5+0,1
	x =								650	11,7+0,1
							100	min. 19,0		
ca. 43	9,5	1150					400	5,9-6,0		
(2a)	5,2	1200					650-680	= 2,0		
	1350	0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5), Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,8 bar 100,5-102,5 (98,5-104,5)	1150*	LDA 650	0,8 bar 112,5-115,5 (110,5-117,5)	100	165,0-185,0 =19,0-21,0 mm RW	400	6,0
			LDA 550	0 bar 86,0-92,0 (84,0-94,0)	400	12,0-16,0 (10,0-18,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

A12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 2522 + RSV..A2B2055DL	0,24	0,10	11,3-11,4 10,4-10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 4,1 c 5
1. Edition
En

PES 4 A 80 D 410/3 RS 2523 RSV 325-900 A 1 C 602-2 L

Komb.-Nr. 0 400 864 064

supersedes -
company KHD
engine F 4 L 913
43,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
880	12,2+0,1	5,1 - 5,2	0,25 (0,4)			
325	9,3-9,5	0,9 - 1,5	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	325	8,0	-	-
	X = 3,25						325	7,9 - 8,1		
ca.46 (2a)	11,2	920-930					350 - 410	= 2,0**		
	4,0	955-985								
	1110	0,3-1,4								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
880	50,5 - 51,5 (49,0 - 53,0)	920-930 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

A14

(1A)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 6,1 d

5. Edition

En

Testoil-ISO 4113

PES 6 A 80 D410/3 RS2527 EP/RSV 325-1150 A8 B2014DL A8 C2014 L

Komb.-Nr. 0 400 866 084

supersedes 1.85

company KHD

engine F6 L912 74kW (102PS) 2300 min^{-1}

tractor DX 110 - S 31

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8+0,1	5,6 - 5,7	0,2(0,35)			
325	8,9-9,1	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3- 0,7				ca.21	325	8,5	1150	11,8+0,1
	x =								950	12,0+0,2
							325	8,9-9,1	775	12,5+0,2
ca.56	10,8	1190-1200					490-550	0 = 2,0	450	12,5+0,2
(5)	4,0	1255-1285								
	1350	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1150	56,0 - 57,0 (54,5 - 58,5)	1190-1200 *	775	54,0 - 56,0 (52,0 - 58,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6,1 d 1
2. Edition

En

PES6A 85D 410 RS 2537 RSV 325-1150 A8B2020 DL
Komb.-Nr. 0 400 876 270 A8C2020 DL

supersedes 2.84
company KHD
engine BF 6 L 913
97 kW/2300 min^{-1} (1)
tractor DX145-S15
107kW/2300 min^{-1} (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	8,0-8,2	0,3(0,45)			
325	6,8-7,0	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	- - -	ca.21	325	5,0		
					100	min.19,5		
					325	5,4- 5,6		
ca.55	10,0	1190-1200			510-570	= 2,0		
(2a)	4,0	1225-1255						
	1350	0,3-1,7						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ( ) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1)	LDA 1150	0,7 bar 77,0-78,0 (75,0-80,0)	1190-1200*	LDA 650	0,3 bar 77,0-79,0 (74,5-81,5)	100	120,0-130,0	-	-
	LDA 800	0,5 bar 78,0-81,0 (75,5-82,5)		LDA 500	0 bar 61,0-63,0 (58,5-65,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

A16

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca.24	325	6,4	1150	1,0+0,1
	x =	6,0					100	min.19,5	960	1,7+0,2
							325	6,8-7,0		
ca. 60	10,0	1190-1200					590-650	=2,0	500	2,5+0,1
(5)	4,0	1270-1300								
	1435	0,3-1,4								

(1A)

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitation	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to . . .)						Control rod travel
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
(2) LDA	0,7 bar		LDA	0,7 bar				
1150	79,5 - 81,5	1190-1200*	800	88,0 - 91,0	100	120,0-130,0	-	-
	(77,5 - 83,5)			(86,0 - 93,0)		(117,0-133,0)		
						= 17,4-18,0		
			(6a)	0 bar		mm RW		
			LDA	60,0 - 63,0				
				(58,0 - 65,0)				

Checking values in brackets

*1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing ~~increasing~~ pressure – in bar gauge pressure (g.p.)

Pump/governor	Setting (g.p.) bar	Measurement (g.p.) bar	Control rod travel ~~XXXXXX~~ diminution ~~XXXXXXX~~ difference mm (1) ~~XX~~
2537 mit 2020DL	0,70	0,37	12,5 - 12,6
		0,09	12,2 - 12,3
		0	10,6 - 10,9
			10,6 - 10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A17

A17

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 HAN 10,8 f 1

2. Edition

En

PE 4 A 95 D 420 RS 2556 RSV 350-1100 A 8 B 1120 R
Komb.-Nr. 0 400 674 042 A 8 C 1120 R

supersedes 12.83
company MF-Hanomag
engine D 943

1-2-4-3 je 90° ± 0,5° (± 0,75°)
** Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test 12.84 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,0+0,1	9,3-9,5	0,3 (0,6)			
400	7,9-8,1	4,0-5,0	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	400	7,5	1100	10,0-10,1
	x = 3,75						100	min. 19,0	1005	10,4-10,6
ca.52	9,0	1140-1150					400	7,9-8,1	500	10,9-11,0
(2a)	4,0	1205-1235					580-640	=2,0		
	1345	0,3-1,7					600	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	93,0-95,0 (91,0-97,0)	1140-1150*	700	100,0-103,0 (98,0-105,0)	100	19,5-21,0 mm RW	-	-
			500	92,0-94,0 (90,0-96,0)		**		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A18

418

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 HAN 10,8 i 1

2. Edition

En

PE 6 A 95 D 320 RS 2557 RSV 350-1100 A8B1127 R supersedes 9.83

A8C1127 R company MF-Hanomag

Komb.- Nr. 0 400 676 159 engine D 963 A/1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,2+0,1	12,4-12,5	0,3(0,6)			
350	6,6-6,8	1,4- 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.19	350	6,2	1100	13,2-13,3
	X = 3,75						100	min. 19,5	450	13,2-13,4
							350	6,6-6,8	400	13,5-13,9
ca.50	12,2	1140-1150					470-530	= 2,0		
(2a)	4,0	1220-1250								
	1370	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ..): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	124,0-125,0 (122,0-127,0)	1140-1150*	500	118,0-121,0 (115,5-123,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A19

A19

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 9,6 n 1
1. Edition
En

PE 6 A 95 D 410 LS 2587 RQV 300-1150 AB 1088 L
Komb.-Nr. 0 400 646 266

supersedes –
company: KHD
engine: F 6 L 413 FW
102,0 kW; 2300 min^{-1}
Tunnelling or mining vehicles

1- 6- 5 - 4 - 3 - 2
0-75-120-195-240-315° ± 0,50° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,2	7,8 - 8,0	0,3(0,6)			
300	6,2-6,3	1,4 - 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 68	1150 1350	15,2-17,8 0 - 1,0	-	-	-	ca. 11	100 300	min.7,5 5,9-6,1	300 600	1,2-1,3 3,1-3,4
ca. 64	8,0 4,0	1190-1200 1220-1250				320-400 (3a)	610-670	=2,0	1190	8,5

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	77,5-79,5 (75,5-81,5)	1190-1200 *	800	80,5-82,5 (79,0-84,0)	100	119,0-129,0	1150 800 500	9,0+0,1 9,5+0,1 9,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Set control-rod stop to contact at 500 min/1

10.85

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 n 1
1. Edition

40

En

PE 8 A 95 D 410 LS 2588 RQV 300-1150 AB 1088 L
Komb.-Nr. 0 400 646 124

supersedes -
company: KHD
engine: F 8 L 413 FW
136,0 kW; 2300 min^{-1}
Tunnelling or mining vehicles

1- 8- 7- 2 - 6 - 5 - 4 - 3
0-45-90-135-180-225-270-315° ± 0,50° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,2	7,8 - 8,0	0,3(0,6)			
300	6,2-6,3	1,4 - 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min.7,5	300	1,2-1,3
ca. 64	8,0	1190-1200					300	5,9-6,1	600	3,1-3,4
	4,0	1220-1250					610-670	=2,0	1190	8,5
	1350	0 - 1,0				320-400 (3a)				

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	77,5-79,5 (75,5-81,5)	1190-1200*	800	80,5-82,5 (78,5-84,5)	100	119,0-129,0	1150	9,0+0,1
							800	9,5+0,1
							500	9,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

Set control-rod stop to contact at 500 min/1

10.85

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 n 1
1. Edition

En

PE 10 A 95 D 610/4 LS 2589 RQV 300-1150 AB 1047 DL
Komb.-Nr. 0 400 649 219

supersedes –
company KHD
engine F 10 L 413 FW
170 kW; 2300 min^{-1}

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2
0-27-72-99-144-171-216-243-288-315° ± 0,50° + (0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,1+0,1	7,9 - 8,1	0,3(0,6)			
300	6,2-6,3	1,4 - 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (2a) (1a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min.7,5	300	1,2-1,3
ca. 64	8,0	1190-1200					300	6,2-6,3	600	3,1-3,4
	4,0	1230-1260					620-680	=2,0	1190	8,5
	1350	0 - 1,0				320-410 (3a)				

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	78,5-80,5 (76,5-82,5)	1190-1200 *	800	83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5)	1150	9,1+0,1
							500	9,6+0,1
							895	9,4+0,2
							1030	9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

A22

Test Specifications Fuel Injection Pumps and Governors

(1A) WPP 001/4 KHD 1 g 12
2. Edition
En

PES 6 A 85 D 410 RS 2591 RSV 325-1150 A 8 C 2020
Komb.-Nr. 0 400 876 320

supersedes 10.84
company KHD
engine BF 6 L 913
117 kW/2300 min^{-1}
tractor DX 7.10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Test oil ISO 4113

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1200	12,4+0,1	8,6 - 8,7	0,3(0,45)			
325	7,4-7,6	1,0 - 1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800 x = 6,0	0,3-0,7	-	-	-	ca. 25	325	7,0	1200	12,4-12,5
							100	min. 19,5	500	13,5-13,6
							325	7,4-7,6	925	12,9-13,1
ca. 63 (2a)	11,4	1240-1250					620-680	= 2,0		
	4,0	1350-1380								
	1515	0,3 - 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 85,5-86,5 (83,5-88,5)	1240-1250*	LDA 500	0 bar 65,0-67,0 (63,0-69,0)	100	110,0-120,0 (107,0-123,0)	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

A23

A23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS2591 +RSV..A 8 C 2020	0,70		13,5 - 13,6
		0	12,2 - 12,3
		0,28	13,2 - 13,3
		0,11	12,6 - 12,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

A24

A24
En

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 19,0 n 2
1. Edition
En

PE 12 A 95 D 610 LS 2590 RQV 300-1150 AB 1047 DL
Komb.-Nr. 0 400 640 107

supersedes –
company: KHD
engine: F 12 L 413 FW
204 kW; 2300 min^{-1}

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,50° + (0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,1+0,1	7,9 - 8,1	0,35(0,6)			
300	6,4-6,6	1,4 - 1,8	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 14	100	min.8,0	300	1,2-1,3
ca. 64	8,1	1190-1200					300	6,4-6,6	600	3,1-3,4
	4,0	1225-1255							190	8,5
	1350	0 - 1,0				320-425 (3a)				

Torque control travel a = 0,50 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	78,5-80,5 (76,5-82,5)	1190-1200 *	800	83,0-86,0 (80,5-88,5)	100	116,5-126,5 113,5-129,5)	1150	9,1+0,1
							500	9,6+0,1
							900	9,4+0,2
							1030	9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 1 g 16

2. Edition

En

PES 6 A 85 D 410 RS 2591 RSV 325-1150 A 8 C 2194 L
Komb.-Nr. 0 400 876 326

superseded 4.85
company KHD
engine BF 6 L 913
tractor DX 7.10

Test-oil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,4+0,1	8,4-8,5	0,3(0,45)			
325	7,4-7,6	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 17	325	7,0	1200	12,4-12,5
	X = 6,0								500	13,5-13,6
							100	min.19,5	925	12,9-13,1
							325	7,4-7,6		
ca. 54 (2a)	11,4	1240-1250					620-680	=2,0		
	4,0	1350-1380								
	1515	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	84,0-85,0 (82,0-87,0)	1240-1250*	-	-	100	17,0-17,5 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

B2

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 6,1 k

3. Edition

En

PES 6 A 85 D 410/3 RS 2592 RQV 300-1250 AB 1089 L

Komb.-Nr. 0 400 836 026

supersedes 9.82
company: KHD
engine: BF 6 L 913

1 680 410 139

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,9+0,1	9,1-9,2	0,3(0,45)			
300	6,8-7,0	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 14	100	min.8,4	250	0,5-0,7
							300	6,8-7,0	550	3,4-3,6
ca. 68	10,9	1290-1300							900	5,2-5,4
	4,0	1370-1400							1250	8,1
	1500	0-1,0				325-500 (3a)				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9	
LDA	0,7 bar	1290-1300*	LDA	0,7 bar	100	110,0-120,0	1250	11,9+0,1	1
1250	91,0-92,0		800	86,5-89,5		(107,0-123,0)	500	12,3+0,1	1
	(89,0-94,0)			(84,0-92,0)			800	12,2+0,1	1
			LDA	0 bar			975	12,0+0,2	2
			500	62,5-65,5					
				(60,5-67,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2592 + AB 1089 L	0,7	0 0,40 0,28	12,2-12,3 10,8-10,9 12,0-12,1 11,3-11,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 12,7 n 40
4. Edition

En

PE 8 A 95 D 410 LS 2609 RQV 300-1250 AB 1128 L
Komb.-Nr. 0 400 648 129
1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45 ° ±0,5 ° (±0,75 °)

supersedes 9.85
company: KHD
engine: BF 8 L 413 F
235 kW (320 PS)
2500 min^{-1}

Test-oil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,8-1,9 (1,75-1,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,6+0,1	11,9-12,1	0,35(0,6)			
300	6,6-6,8	1,6-2,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca.14	100	min.8,2	320	1,7-1,8
							300	6,6-6,8	600	3,0-3,2
ca. 65	10,6	1290-1300							1000	5,4-5,6
	4,0	1360-1390							1300	8,5
	1450	0 - 1,0								
						315-420 (3a)				

Torque control travel a = 0,75 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 119,0-121,0 (117,0-123,0)	1290-1300 *	LDA 750	0,7 bar 124,5-127,5 (122,5-129,5)	100	130,0-140,0 (127,0-143,0) ≈ 14,6-14,8 mm RW	1250	11,6+0,1
							750	12,4+0,1
							960	12,2+0,2
			LDA 500	0 bar 105,0-107,0 (103,0-109,0)			1090	11,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

B5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PE 8 A .. LS2609 + .. AB 1128	0,70	0 0,27 0,23	12,4 -12,5 11,7 -11,8 12,1 -12,2 11,7-11,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 4,1 d 4

1. Edition

En

PES 4 A 85 D 410/3 RS 2638 RSV 325-1400 A 8 C 540-2 L

Komb.-Nr. 0 400 864 065

supersedes
company KHD
engine BF 4 L 913
35,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,6+0,1	7,0-7,1	0,3 (0,5)			
325	8,0-8,2	1,0-1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca.21	325	7,7	1250	11,6-11,7
	x = 4,75								500	12,2-12,3
							100	min.19,5	1000	12,0-12,2
							325	8,1-8,3		
ca.60 (2a)	10,6	1290-1300					630-690	= 2,0		
	4,0	1390-1420								
	1560	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	70,0-71,0 (68,0-73,0)	1290-1300*	800	66,0-68,0 (63,5-70,5)	-	-	-	-
			1000	66,0-68,0 (63,5-70,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 4,1 d 1
2. Edition
En

PES 4 A 85 D 410/3 RS 2638 RSV 325-1150 A 2 C 707-2 L

Komb.-Nr. 0 400 864 062

supersedes 8.85
company KHD
engine BF 4 L 913
67 kW/2300 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,7+0,1	8,2 - 8,3	0,3 (0,45)			
325	8,1-8,3	1,0 - 1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 0,7	-	-	-	ca. 21	325	7,7	1000	12,7-12,8
	X = 4,25						100	min. 19,5	500	13,7-13,8
							325	8,1-8,3	800	13,3-13,5
ca. 43 (2a)	11,7	1040-1050					655 - 715	= 2,0	900	12,9-13,1
	4,0	1175-1205								
	1340	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 81,5 - 82,5 (79,5 - 84,5)	1040-1050	LDA 800	0,7 bar 86,5 - 88,5 (84,0 - 91,0)	100	115,0-125,0 - (112,0-128,0) =18,2 - 18,4 mm RW	-	-
			LDA 500	0 bar 61,5 - 63,5 (59,5 - 65,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PES 4 A..RS 2638 +RSV..A 2 C 707-2L	0,70	0 0,45 0,29	13,7 - 13,8 12,1 - 12,2 13,3 - 13,4 12,5 - 12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 1 g 19
1. Edition
En

PES 3 A 85 D 410/3 RS 2642 RSV 325-1250 A 2 C 2168-2 L supersedes -
Komb.-NR. 0 400 863 009 company KHD
engine F 3 L 913
45,0 kW/2500 min^{-1}
tractor DX 3.50

Test-No 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,9+0,1	7,1 - 7,2	0,3 (0,5)			
325	7,9-8,1	0,7 - 1,3	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	325	7,5	1250	10,9-11,0
	X = 4,0						325	7,9 - 8,1	800	11,3-11,4
ca. 51 (2a)	9,9	1290-1300					480 -	540 = 2,0	1045	11,0-11,2
	4,0	1365-1395								
	1520	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	70,5 - 71,5 (68,5 - 73,5)	1290-1300*	800	62,5 - 64,5 (60,0 - 67,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

B10

B10

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 b

4. Edition

En

PES 6 A 100 D 410 RS 3034 RSV 600-1100 A 2 B 2080 L

supersedes 10.83

company John Deere

engine 6.466 AZ-01 152 kW

Komb.-Nr. 0 401 276 049

Use overflow valve 1 413 385 007

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,9-13,1	0,4			
600	4,5-4,7	1,3-1,7	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	600	4,1	-	-
							100	min. 19,0		
							600	4,5-4,7		
ca. 37 (2a)	10,7	1145-1155					635-695	= 2,0		
	4,0	1195-1225					800	max. 1,0		
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat (Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 129,0-131,0 (126,5-133,5)	1145-1155*	LDA 500	0 bar 68,5-71,5 (67,0-73,0)	100	170,0-195,0 = 19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.95

B11

B11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A ..RS 3034 +RSV..A 2 B 2080L	0,29	0,12	2,65-2,75 0,7-1,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A) WPP 001/4 KHD 12,6 b 1
2. Edition

En

PE 8 AM 80 D 310 RS 2004 RSV 200-1150 A 4 B 73 DL

supersedes 10.84
company KHD
engine F 8 L 714 A

Komb.-Nr. 0 405 078 204

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	7,4 - 7,8	0,4			
	9,0	3,9 - 4,7				
	15,0	10,3 -11,4				
200	9,0	2,8 - 3,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.72	1150	16,0	without auxiliary spring	ca. 25	200	6,0	1130	0
	1200	9,0			100	19,0-21,0	900	0
	1230	4,5			200	5,7- 6,3	700	0,7 - 0,9
	1180	11,0-13,0			300	3,6- 5,0	400	1,1 - 1,3
(2a)	1200	7,0-10,5	with auxiliary spring		400	0,4- 3,4		
	1250	2,2- 4,5			550	0- 1,0		
	~~1350~~	~~0 - 1,0~~						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to ( ) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	72,0 - 73,0 (70,5 - 74,5)		800	75,0 - 77,0 (37,5 - 78,5)	-	-	-	-
			600	75,5 - 77,5 (74,0 - 79,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 12,6 b 2

1. Edition

En

PE 8 AM 80 D 310 RS 2004 RSV 200-1150 A 4 C 73 L

Komb.-Nr. 0 405 078 204

supersedes

company KHD

engine F 8 L 714 A
131,0 kW

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	1,5+0,1	7,2-7,3	0,2(0,35)			
200	8,9-9,1	2,8-3,6	0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-0,7 x = 4,0		-	-	-	ca. 20	200	7,0	1150	11,5-11,6
							100	min. 19,5	500	12,8-12,9
							200	7,4-7,6	800	11,9-12,1
ca. 67 (2a)	10,5 1190-1200 4,0 1230-1260 1390 0,3-1,4						435-495 = 2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	72,0-73,0 (70,5-74,5)	1190-1200*	600	75,5-77,5 (74,0-79,0)	-	-	-	-
			800	75,0-77,0 (73,0-79,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

Test Specifications Fuel Injection Pumps ② and Governors

40
WPP 001/4 RVI 8,8p
1. Edition

En

Test of ISO 4113

PES 6 MW 100/320 RS 1025
RQ 750 MW 42
0 403 446 154

supersedes –
company RVI
engine: MIDR 06.02.12
100 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,5+0,1	13,35-13,55	0,35 (0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
				13,5 4,0 0-1	750-755 795-805 825 VH 32 ± 3						

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
700	133,5-135,5 (131,5-137,5)				100	80,0-90,0 (77,0-93,0)

Checking values in brackets

11.85

Test oil ISO 4113

PE 8 MW 100/720 LS 1117
RQ 300/1150 MW 61
0 403 548 010

1-8-7-2-6-5-4-3 je 45°

supersedes
company: KHD
engine: F8L 413 FZ
180 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	13,1+0,1	10,8-11,0	0,35(0,6)			
300	8,5-8,6	1,1-1,5	0,35(0,55)			
1150	11,7+0,1		0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max. 46	550 1350	19,2-20,8 0-1,0				ca.16 (3a)	100 300	min.10 8,5-8,6		
ca.34	10,7 4,0	1200-1210 1275-1305								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5c): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9	
650	108,0-110,0 (106,0-112,0)	1200-1210*	1150	98,0-100,0 (95,0-104,0)	100	130,0-140,0 (127,0-143,0)	1150	11,7+0	1
					300	11,0-15,0 (8,5-17,5)	850	12,4+0	3
					100-230	(80-250)	650	13,1+0	1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 13,4d2

1. Edition

En

1 680 813 040

PE 8 MW 100/720 LS 1118
RQ 300/1150 MW 63-1
0 403 548 012
1-8-7-2-6-5-4-3 je 45°

supersedes –
company: KHD
engine: BF 8 L 513
225 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	13,2+0,1	14,3-14,5	0,35 (0,6)			
300	7,0-7,1	1,8-2,2	0,35 (0,55)			
1150	12,1+0,1		0,5 (0,7)			
450	12,0+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8 VH 46°	650	20,0	11,1 4,0 0-1	1190-1200 1255-1285 1340			100 300	min. 8,5 7,0-7,1 330-400	650 1150 850	13,2-13,3 12,1-12,2 12,9-13,1

Torque-control travel on flyweight assembly dimension a = 0,40 mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 650	0,9 bar 143,0-145,0 (141,0-147,0)		LDA 1150 LDA 450	0,9 bar 134,0-136,0 (132,0-138,0) 0 bar 111,0-113,0 (109,0-115,0)	100 300	140,0-150,0 (137,0-153,0) 18,0-22,0 (16,0-24,0)

Checking values in brackets

11.85

B17

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1118 mit MW 63-1	0,9	0	13,2-13,3 12,0-12,1
		0,31	12,2-12,3
		0,42	12,8-12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts.

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 13,4d3
En 1. Edition

Testoil-ISO 4113

PE 8 MW 100/720 LS 1128
RQ 300/1150 MW 63
0 403 548 011

1-8-7-2-6-5-4-3 je 45°

supersedes
company KHD
engine: BF 8 L 513
225 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	14,1-14,3	0,35(0,6)			
300	6,5-6,6	1,3-1,7	0,35(0,55)			
1150	12,5+0,1		0,5 (0,7)			
450	11,5+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,5	1190-1205			300	6,5-6,6	700	13,0-13,1
				4,0	1270-1300			100	min.8,1	1150	12,5-12,6
				0-1	1350					950	12,7-12,9
									330-400		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,99 bar		LDA	0,99 bar	100	135,0-155,0
700	141,0-143,0		1150	136,0-140,0		(132,0-158,0)
	(139,0-145,0)			(135,0-141,0)		
			LDA	o bar	300	13,0-17,0
			450	107,0-109,0		(11,0-19,0)
				(105,0-111,0)		

Checking values in brackets

11.85

B19

B19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
LS 1128 mit MW 63	0,99	0 0,30 0,40	13,0-13,1 11,5-11,6 11,8-11,9 12,6-12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

PE 8 MW 100/720 LS 1128
RQ 300/1150 MW 63-2
0 403 548 014
1-8-7-2-6-5-4-3 je 45°

supersedes
company KHD
engine BF 8L 513
235 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,6+0,1	14,1-14,3	0,35(0,6)			
300	6,5-6,6	1,3-1,7	0,35(0,55)			
700	13,6+0,1		0,5 (0,7)			
400	11,3-11,4					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,6	1190-1205			300	6,5-6,6	1150	12,6-12,7
				4,0	1255-1285			100	min.8,1	700	13,6-13,7
				0-1	1350					950	13,0-13,2
									330-400	1100	12,6-12,7

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,9 bar		LDA	0,9 bar	100	135,0-155,0
1150	141,0-143,0		700	153,0-155,0		(132,0-158,0)
	(139,0-145,0)			(151,0-157,0)		
			LDA	0 bar	300	13,0-17,0
			450	107,0-109,0		(11,0-19,0)
				(105,0-111,0)		

Checking values in brackets

11.85

B21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
LS 1128 mit MW 63-2	0,48	0,33 0 0,90	13,0-13,1 12,2-12,5 11,3-11,4 13,6-13,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 i 9

2. Edition

En

PE 6 P 120 A 320 RS 372-1 RQ 250/1100 PA 417 R
Komb.-Nr. 0 401 846 464

supersedes 5.84
company DAF
engine DKS 1160
235 kW

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	17,2-17,4	0,5(0,9)			
250	6,2-6,4	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	9,9 4,0 1350	1145-1160 1210-1240 0-1,0	250	6,3	100 250 445-485	min.7,4 6,2-6,4 = 2,0	850 1100	10,9-11,0 10,8-11,0

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 850	0,7 bar 172,0-174,0 (169,0-177,0)	-	LDA 600	0 bar 130,0-132,0 (127,0-135,0)	100	300,0-340,0 (296,0-344,0) = 19,5-21,0 mm RW

Checking values in brackets

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 372-1 + RQ..PA 417 R	0,70	0 0,30 0,26	10,9-11,0 9,8-9,9 10,6-10,7 10,0-10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PE 6 P 110 / A 320 RS 141 RQV 200-1100 PA 103/2R
RS141,Z,Y 250-1100 PA 234/2R

supersedes 7.83
company Volvo
engine TD 120

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	17,9 - 18,7	0,6			2,5±0,1 ** (max.2,2-2,9)
600	6	3,2 - 4,2				
	12	17,3 - 18,8				
	15	23,5 - 25,3				
200	6	1,1 - 2,1				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

RQV .. 103/2R mit 141

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	Sliding sleeve travel Torque-control travel: rev/min 10	mm 11
ca. 68	1150	15,5-18,3				ca.23	100	7,0-10,0	200	1,5-2,3
	1410	0					200	5,0-8,4	500	3,6-4,0
ca. 66	1100	15,0-18,0					300	2,4-5,2	1150	8,3
	1200	7,2-12,6					400	0 -2,2		
	1260	2,0-9,0					460	0	-	-
	1400	0								

Torque control travel a = mm

Caution: abnorm. sldg-sleeve pos'n = 36,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	Rotational speed limitation: rev/min 3	Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point: rev/min 6	cm³/1000 strokes 7	Intermediate rotational speed Torque-control travel: rev/min 8	mm
LDA	0,7 bar		LDA	0 bar				
700	181,0-183,0	1150	700	124,0-127,0	100	390 - 410		
					200	17 - 21 **		
					dispersion max. 2,5			
(increase by ± 1,0 cm³!)								

Checking values in brackets

* 1 mm less control rod travel than col 2

C1

RQV..234/2R with 141

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.50	1170	15,0-18,3					ca. 13	100	9,0-11,0	350	1,4-2,0
	1400	0						200	7,2-9,9	650	3,7-4,0
ca.45	1100	15,0-17,8						300	4,0-6,9	1170	8,3
	1200	6,4-12,0						400	0 -2,8		
	1280	0 -6,2						490	0	-	-
	1360	0					(3a)				

Torque control travel a = ___ mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 181,0-183,0 (178,0-186,0)	1160-1170 *	LDA 700	0 bar 124,0-127,0 (121,0-130,0)	100	340,0-360,0		
					250	11 - 15 dispersion max. 2,5 *		

Checking values in brackets

* 1 mm less control rod travel than col 2

RQV .. 234/2R mit 141Z

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca. 50	1170	15,0-18,3					ca.13	100	9,0-11,0	350	1,4-2,0
	1400	0						200	7,2-9,9	650	3,7-4,0
ca. 45	1100	15,0-17,8						300	4,0-6,9	1170	8,3
	1200	6,4-12,0						400	0 -2,8		
	1280	0 -6,2						490	0	-	-
	1360	0					(3a)				

Torque control travel a = ___ mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 205,0-207,0	1160-1170*	LDA 700	0 bar 124,0-127,0	100	390 - 410		
					250	11 - 15 dispersion max. 2,5	**	

Checking values in brackets

* 1 mm less control rod travel than col 2

C2

C2 En

B. Governor Settings

RQV .. 234/2R with 141Y

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.50	1170	15,0-18,3				ca.13	100	9,0-11,0	350	1,4-2,0
	1400	0					200	7,2-9,9	650	3,7-4,0
ca.45	1100	15,0-17,8					300	4,0-6,9	1170	8,3
	1200	6,4-12,0					400	0 -2,8		
	1280	0 -6,2					490	0	-	-
	1360	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0 bar				
700	161,0-163,0	1160-1170	700	116,0-119,0	100	390 - 410		
					250	11 - 15		
					dispersion max. 2,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm
141 with 103/2R	0,48-0,50	0,12-0,22	- - -
141 with 234/2R	0,90	0	11,3 - 11,4
		0,51	8,8 - 8,9
		0,31	10,7 - 10,8
			9,3 - 9,5
141Z with 234/2R	0,62-0,66	0,14-0,27	- - -
141Y with 234/2R	0,49-0,52	0,14-0,30	- - -

En

C3

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 10,0 d
2. Edition
En

PE 5 P 100 A 720 RS 265 RSV 350-1000 P1/14
Komb.-Nr. 9 400 087 269
1-2-4-5-3 je 72° ± 0,5° (± 0,75°)

supersedes 7.85
company Daimler-Benz
engine OM 355-5

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,9+0,1	11,4 - 11,6	0,35 (0,6)			
350	7,4-7,6	1,5 - 1,9	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 X =	0,3-1,0	-	=	=	ca. 24	350	7,0	-	-
							100	min. 19,0		
ca. 53 (2a)	11,9	1040-1050					350	7,4-7,6		
	4,0	1095-1125					520 - 580	= 2,0		
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note. changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	114,0-116,0 (112,0-118,0)	1040-1050*	500	103,0 -106,0 100,5 -108,5	100	150,0-170,0 = 18,1-18,5 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C4

PE 6 P 110 A 320 RS 372-1
Komb.-Nr. 0 401 846 463

RQ 250/1100 PA 417-1
RQ 250/1100 PA 417

supersedes 6.85
company: DAF
engine: DKTD 1160
191 kW (260 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	13,7-13,9	0,4(0,75)			
250	6,6-6,8	0,7-1,1	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	11,0 4,0 1350	1145-1160 1220-1250 0 - 1,0	250	6,7	100 250 460-5	min. 7,8 6,6-6,8 00 = 2,0	850 1100	12,0-12,1 11,9-12,1

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA 850	0,7 bar 137,0-139,0 (134,5-141,5)	-	LDA 600	0 bar 128,0-130,0 (125,5-132,5)	100	245,0-285,0 (241,0-289,0) = 19,5-21,0 mm RW

Checking values in brackets

11.85

C5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS372-1 +..PA417-1 oder ..PA 417	0,70	0 0,30 0,28	12,0-12,1 11,5-11,6 11,8-11,9 11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 k 16
1. Edition
En

PE 6 P 120 A 320 RS 372-1 RSV 250-1100 P 5 A 508-2
Komb.-Nr. 0 401 876 310
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company DAF
engine DKS 1160
235,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9+0,1	17,2-17,4	0,5 (0,9)			
250	6,6-6,8	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	5,8	850	11,1-11,2
	X = 5,0						250	6,2-6,4	400	11,1-11,3
ca. 54 (2a)	9,9	1140-1150					620-680	= 2,0	300	11,4-11,9
	4,0	1260-1290								
	1425	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ..., rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 172,0-174,0 (169,0-177,0)	1140-1150*	LDA 600	0 bar 130-132,0 (127,0-135,0)	100	300,0-340 (296,0-344)	0 - 0)	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

C7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6P.. RS 372-1 + RSV..P5A508-2	0,7	0 0,36 0,28	10,9-11,0 9,8-9,9 10,6-10,7 10,0-10,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 29

1. Edition

En

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 504
Komb.-Nr. 0 402 046 204 = MAN-Nr. 2-7113
0 402 046 205 = MAN-Nr. 2-7111
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company: MAN
engine: D 2566 MKF
206 kW/2200 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	17,8-18,0	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca.12	100	min.7,8	300	1,8-2,1
							250	6,2-6,4	800	5,3-5,6
ca. 66	9,2	1140-1150							1100	7,9
	4,0	1210-1240								
	1400	0-1,0				365-480 (3a)				

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 45°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1140-1150*	LDA	0,7 bar	100	205,0-225,0	750	11,4+0,1
750	178,0-180,0		650	171,0-177,0		(201,0-229,0	1100	10,2+0,1
	(175,0-183,0)			(168,0-180,0)			900	11,0+0,2
LDA	0,7 bar		LDA	0,31 bar	250	12,0-18,0	1000	10,3+0,3
1100	160,0-166,0		500	131,0-137,0		(9,0-21,0)		
	(157,0-169,0)			(128,0-140,0)				
			LDA 500	0 bar 104,0-106,0				
				(101,0-109,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388 +RQV..PA 504	0,70	0 0,31 0,43	11,4-11,5 9,2-9,3 10,3-10,4 10,9-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PES 6 P 120 A 720 LS 388 RQ 250/1050 PA 658-8
Komb.-Nr. 0 402 046 266
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84
company MAN
engine D 2566 MK 279
206 kW/2100 min^{-1}
MAN-Nr. 2-7238

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,8+0,1	18,7-18,9	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,7	1095-1110	250	6,4	100	min.7,9	750	11,8-11,9
VH =	max. 46°			4,0	1175-1205			250	6,3-6,5	1050	10,7-10,8
				1300	0-1,0			340-380 = 2,0		870	11,6-11,8
										935	10,9-11,2

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation: At 1095-1110 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
LDA	1,0 bar	-	LDA	1,0 bar	100	205,0-225,0
750	187,0-189,0		650	178,0-184,0		(201,0-229,0)
	(184,0-192,0)			(175,0-187,0)		
LDA	1,0 bar		LDA	0 bar	250	6,3-6,5 mm RW
1050	167,0-173,0		500	113,0-115,0		
	(164,0-176,0)			(110,0-118,0)		

Checking values in brackets

11.85

C11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6P..LS388 + RQ..PA658-8	1,0	0 0,31 0,44	11,8-11,9 9,5-9,6 10,5-10,6 11,2-11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 w

1. Edition

En

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-13

Komb.-Nr. 0 402 046 319

supersedes

company: MAN

engine: D 2566 MLUM/US
227,0 kW
MAN-Nr. 2-7697

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,10 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,6+0,1	18,1-18,3	0,5(0,9)			
300	6,4-6,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,4	1145-1160	300	6,5	100	min. 8,0	750	12,0-12,1
				4,0	1185-1215			300	6,4-6,6	1100	11,4-11,5
VH = max. 46°				1400	0-1,0			370-410	= 2,0	850	11,7-11,9
									-	920	11,4-11,5

Torque-control travel on flyweight assembly dimension a = 0,20 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	1,0 bar	-	LDA	1,0 bar	100	225,0-245,0
750	181,0-183,0		650	174,0-180,0		(221,0-249,0)
	(178,0-186,0)			(171,0-183,0)	300	12,0-18,0
LDA	1,0 bar		LDA	0,35 bar		(9,0-21,0)
1100	180,0-184,0		500	140,0-150,0		
	(177,0-187,0)			(137,0-153,0)		
			LDA	0 bar		
			500	111,0-113,0		
				(108,0-116,0)		

Checking values in brackets

10.85

C13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 388 + RQ..PA 658-13	1,0	0	11,6-11,7
		0,22	9,4-9,5
		0,48	9,7-9,8
			11,0-11,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-14

Komb.-Nr. 0 402 046 320

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company MAN D 2566 MLUM/CA

engine 227,0 kW MAN-Nr. 2-7698

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,4+0,1	18,8-19,0	0,5(0,9)			
300	7,0-7,2	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,1	1145-1160	300	7,1	100	min.8,6	750	12,7-12,8
				4,0	1185-1215			300	7,0-7,2	1100	12,1-12,2
VH = max. 46°				1400	0-1,0			380-420	= 2,0	850	12,5-12,7
									-	920	12,1-12,4

Torque-control travel on flyweight assembly dimension a = 0,20 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA	1,0 bar	-	LDA	1,0 bar	100	225,0-245,0
750	188,0-190,0		650	183,0-189,0		(221,0-249,0)
	(185,0-193,0)			(180,0-192,0)	300	12,0-18,0
LDA	1,0 bar		LDA	0,35 bar		(9,0-21,0)
1100	190,0-194,0		500	140,0-150,0		
	(187,0-197,0)			(137,0-153,0)		
			LDA	0 bar		
			500	110,0-112,0		
				(107,0-115,0)		

Checking values in brackets

10.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388 + RQ..PA 658-14	1,0	0 0,25 0,58	12,4-12,5 9,7-9,8 10,0-10,1 11,5-11,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 w 2

1. Edition

En

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-15

Komb.-Nr. 0 402 046 318

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company MAN
engine D 2566 MLUH/CA
192,0 kW
MAN-Nr. 2-7700

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,10 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,1±0,1	15,3-15,5	0,5(0,9)			
300	6,4-6,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,7	1145-1160	300	6,5	100	min.8,0	750	11,2-11.3
				4,0	1180-1210			300	6,4-6,6	1100	10,7-10,8
VH	= max. 46°			1400	0-1,0			370-410= 2,0		850	11,0-11,2
									-	920	10,7-11,0

Torque-control travel on flyweight assembly dimension a = 0,20 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA	1,0 bar	-	LDA	1,0 bar	100	225,0-245,0
750	153,0-155,0		650	147,0-153,0		(221,0-249,0)
	(150,0-158,0)			(144,0-156,0)	300	12,0-18,0
LDA	1,0 bar		LDA	0,35 bar		(9,0-21,0)
1100	162,0-166,0		500	131,0-141,0		
	(159,0-169,0)			(128,0-144,0)		
			LDA	0 bar		
			500	111,0-113,0		
				(108,0-116,0)		

Checking values in brackets

10.85

BOSCH

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388 + RQ..PA 658-15	1,0	0 0,22 0,35	11,1-11,2 9,7-9,8 10,0-10,1 10,6-10,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 w 3

1. Edition

En

PES 6 P 120 A 720 LS 388 RQ 300/1100 PA 658-16

Komb.-Nr. 0 402 046 321

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company MAN

engine: D 2566 MLUH/US

177,0 kW

MAN-Nr. 2-7720

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,10 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	10,6+0,1	14,5-14,7	0,5(0,9)			
300	6,3-6,5	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	8,7	1145-1160	300	6,4	100	min.7,9	750	10,7-10,8
				4,0	1175-1205			300	6,3-6,5	1100	9,7-9,8
VH =	max. 46°			1350	0-1,0			370-410	= 2,0	870	10,5-10,7
									-	950	9,9-10,2

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
LDA	1,0 bar	-	LDA	1,0 bar	100	225,0-245,0
750	145,0-147,0		650	141,0-147,0		(221,0-249,0)
	(142,0-150,0)			(138,0-150,0)	300	12,0-18,0
LDA	1,0 bar		LDA	0,35 bar		(9,0-21,0)
1100	141,0-145,0		500	130,0-140,0		
	(138,0-148,0)			(127,0-143,0)		
			LDA	0 bar		
			500	111,0-113,0		
				(108,0-116,0)		

Checking values in brackets

10.85

C19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388 + RQ..PA 658-16	1,0	0 0,25 0,32	10,6-10,7 9,6-9,7 9,9-10,0 10,2-10,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP C01/4 MAN 11,1 q 13
2. Edition
En

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 671
Komb.-Nr. 0 402 046 274, 0 402 046 275

superseded 7.83
company MAN
engine D 2566 MK(F)
206 kW/2200 min^{-1}

Test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	17,8-18,0	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 12	100	min.7,8	300	1,7-2,0
							250	6,2-6,4	850	6,0-6,2
ca. 63	9,2	1140-1150							1100	8,3
	4,0	1205-1235								
	1350	0-1,0								
						395-520 (3a)				

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel rev/min 8	Control rod travel mm 9
LDA 750	0,7 bar 178,0-180,0 (175,0-183,0)	1140-1150*	LDA 500	0,31 bar 131,0-137,0 (128,0-140,0)	100	205,0-225,0 (201,0-229,0	750	11,4+0,1
							1100	10,2+0,1
							860	11,0+0,2
LDA 1100	0,7 bar 160,0-166,0 (157,0-169,0)		LDA 500	0 bar 104,0-106,0 (101,0-109,0)			990	10,4+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

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D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 13

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388 + RQV..PA 671	0,70	0 0,31 0,43	11,4-11,5 9,2-9,3 10,3-10,4 10,9-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 14

2. Edition

En

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 671-1

Komb.-Nr. 0 402 046 277

Values only apply to test nozzle-and-holder assembly 1 588 901 019 and fuel-injection test tubing 1 680 750 067

superseded 3.83

company MAN

engine D 2566 MK 235 kW/2200 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,8-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 12	100	min.7,9	300	1,7-2,0
							250	6,3-6,5	850	6,0-6,2
ca. 64	10,3	1140-1150							1100	8,3
	4,0	1220-1250								
	1350	0-1,0				595-520 (3a)				

Torque control travel a = 1,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar	1140-1150*	LDA 500	0,34 bar	100	205,0-225,0	750	13,1+0,1
	218,0-220,0			144,0-150,0		(201,0-229,0	1100	11,3+0,1
	(215,0-223,0			(141,0-153,0			860	12,6+0,2
LDA 1100	1,0 bar		LDA 500	0 bar			985	11,7+0,3
	180,0-186,0			102,0-104,0				
	(177,0-189,0			(99,0-107,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 14

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388 +RQV..PA 671-1	1,0	0	13,1-13,2
		0,34	9,4-9,5
		0,61	10,9-11,0
			12,5-12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 120 A 720 LS 388 RQV 250-1050 PA 671-2

Komb.-Nr. 0 402 046 278

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.83

company: MAN

engine: D 2566 MK/319 235 kW/2100 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-Spec. 4.3

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,10 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
750	13,1+0,1	21,8-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm ① rev/min ②	Degree of deflection of control lever	rev/min	Control rod travel mm ④	Degree of deflection of control lever	rev/min	Control rod travel mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 12	100	min.7,9	300	1,7-2,0
							250	6,3-6,5	850	6,0-6,2
ca. 62	10,3	1090-1100							1050	7,7
	4,0	1180-1210								
	1300	0-1,0								
						395-520 ③a				

Torque control travel a = 1,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery ⑥ idle switching point		Torque-control travel ⑤	
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	1,0 bar	1090-1100*	LDA	0,34 bar	100	205,0-225,0	750	13,1+0,1
750	218,0-220,0		500	144,0-150,0		(201,0-229,0	1050	11,3+0,1
	(215,0-223,0)			(141,0-153,0)			850	12,6+0,2
LDA	1,0 bar		LDA	0 bar			950	11,7+0,3
1050	180,0-186,0		500	102,0-104,0				
	(177,0-189,0			(99,0-107,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 15

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 388 +RQV..PA 671-2	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 v 5

1. Edition

En

PE 6 P 110 A 320 RS 407-1 RSV 275-1000 P 5 A 508-5
Komb.-Nr. 0 401 876 305

supersedes
company DAF
engine DKCL 1160
155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,3+0,1	14,0-14,2	0,4(0,75)			
275	7,0-7,2	0,9-1,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	275	6,6	600	12,5-12,6
	X = 4,5						275	7,0-7,2	1000	11,1-11,3
							675-735	= 2,0	750	12,1-12,3
ca.48	10,1	1040-1050							850	11,4-11,7
(2a)	4,0	1160-1190								
	1325	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	LDA	0,7 bar	100	245,0-265	0 -	-
600	139,5-141,5		1000	115,0-119,0		(241,0-269,0)		
	(137,0-144,0)			(112,0-122,0)				
			LDA	0 bar	275	9,0-14,0		
			600	137,0-139,0		(6,5-16,5)		
				(134,5-141,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

D3

D3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 407-1 + RSV..P 5 A 508-5	0,70	0 0,28	12,3-12,4 12,1-12,2 12,2-12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 o 7

1. Edition

En

PE 6 P 120 A 320 RS 415-1 RSV 250-1000 P5A 508-1
Komb.-Nr. 0 401 876 295
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company DAF
engine DKZ 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,5+0,1	20,6-20,8	0,5 (0,9)			
250	6,7-6,9	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	250	6,0	850	12,7-12,8
	x = 4,8								400	12,7-12,8
							250	6,4-6,6	300	12,9-13,4
ca. 49 (2a)	11,5	1035-1045					660-720	±2,0		
	4,0	1190-1220								
	1350	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter: Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 206,0-208,0 (203,0-211,0)	1035-1045*	LDA 600	0 bar 140,0-142,0 (137,0-145,0)	100	305,0-345,0 (301,0-349,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

D5

D5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 415-1 + RSV..P5A 508-1	0,70	0 0,34 0,26	12,5-12,6 10,3-10,5 11,8-11,9 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 o 8

1. Edition

En

PE 6 P 120 A 320 RS 415-1 RSV 250-1100 P5A 508-2
Komb.-Nr. 0 401 876 296
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes_
company DAF
engine DKX 1160

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,6+0,1	18,7-18,9	0,5 (0,9)			
250	6,7-6,9	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca. 23	250	6,0	850	11,8-11,9
	x = 4,8								400	11,8-12,0
							250	6,4-6,6	300	12,1-12,6
ca. 53 (2a)	10,6	1135-1145					640-700	=2,0		
	4,0	1270-1300								
	1430	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 187,0-189,0 (184,0-192,0)	1135-1145*	LDA 600	0 bar 140,0-142,0 (137,0-145,0)	100	305,0-345,0 (301,0-349,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

D7

D7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 415-1 + RSV..P5A 508-2	0,7	0 0,30 0,26	11,6-11,7 10,3-10,5 11,3-11,4 10,8-11,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 o 9

1. Edition

En

PE 6 P 120 A 320 RS 415-1 Y RSV 250-900 P5A 508
Komb.-Nr. 0 401 876 294
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company DAF
engine DKZ 1160 E

Test-No. 413

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
875	11,4+0,1	18,2-18,4	0,5 (0,9)			
250	6,7-6,9	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 21	250	6,0	875	11,4-11,5
	x = 4,3								600	12,4-12,5
							250	6,4-6,6	725	12,0-12,2
ca. 45	10,4	935-945					395-455	4,0	775	11,7-11,9
(2a)	4,0	1020-1050								
	1180	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	935-945*	LDA	0,7 bar	100	305,0-345	0 -	-
875	182,0-184,0		600	186,0-192,0		(301,0-349,0)		
	(179,0-187,0)			(183,0-195,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

D9

D9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P..RS 415-1 Y + RSV...P5A 508	0,7	0 0,35 0,26	12,2-12,3 10,3-10,5 11,7-11,8 10,7-11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 o 10

1. Edition

En

PE 6 P 120 A 320 RS 415-1 Z RSV 250-900 P5A 508
Komb.-Nr. 0 401 876 293
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company DAF
engine DKX 1160 E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
875	11,0+0,1	17,1-17,3	0,5 (0,9)			
250	6,7-6,9	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 26	250	6,0	875	11,0-11,1
	x = 4,5								600	11,9-12,0
							250	6,4-6,6	725	11,5-11,7
ca. 49	10,0	935-945					395-455	=2,0	775	11,2-11,4
(2a)	4,0	1020-1050								
	1180	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	935-945*	LDA	0,7 bar	100	305,0-345,0	-	-
875	171,0-173,0		600	172,0-178,0		(301,0-349,0)		
	(168,0-176,0)			(169,0-181,0)				
			LDA	0 bar				
			600	140,0-142,0				
				(137,0-145,0)				

Checking values in brackets

* : mm less control rod travel than col 2

10.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 415-1 Z + RSV..P5A 508	0,7	0 0,30 0,26	11,6-11,7 10,3-10,5 11,1-11,2 10,6-10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 o 11

1. Edition

En

PE 6 P 120 A 320 RS 415-1 Z RSV 250-1100 P5A 508-4
Komb.-Nr. 0 401 876 323
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company DAF
engine DKV 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,0+0,1	16,7-16,9	0,5 (0,9)			
250	6,5-6,7	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	5,8	650	11,2-11,3
	x = 5,0								1090	9,6-9,8
							250	6,2-6,4	825	10,6-10,8
ca. 54	8,6	1135-1145					650-710	=2,0	925	9,9-10,2
(2a)	4,0	1210-1240								
	1370	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ( ) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 167,0-169,0 (164,0-172,0)	-	LDA 1090	0,7 bar 147,0-151,0 (144,0-154,0)	100	320,0-360,0 (316,0-364,0)	0	-
			LDA 600	0 bar 135,0-137,0 (132,0-140,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 P..RS 415-1 Z + RSV..P5A 508-4	0,7	0 0,29 0,26	11,0-11,1 9,9-10,0 10,7-10,9 10,1-10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 a 4
En 2. Edition

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495-6
Komb-Nr. 0 402 046 302
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84
company: RVI
engine: MIDR 062030 191 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75 - 2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,3-9,4	17,3 - 17,5	0,5 (0,9)			
275	4,6-4,8	1,7 - 2,3	0,8 (1,2)			
Port closing mark		10,5° after port	closing	cylinder	1	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2 - 17,8	-	-	-	ca. 10	200	min.5,0	250	1,0-1,2
ca.65	8,3	1155 - 1165					275	3,2-3,4	475	3,5-4,0
	4,0	1220 - 1250							900	6,4-6,6
	1350	0 - 1,0				290-400 (3a)			1100	8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 173,0-175,0 (170,0-178,0)	1155 - 1165*	LDA 700	0,7 bar 159,0-165,0 (156,0-168,0)	100	140,0-160,0 (136,0-164,0)	-	-
			LDA 500	0 bar 93,0-95,0 (90,0-98,0)	275	3,2-3,4 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P RS 419 + RQV..PA 495-6	0,70	0 0,27 0,22	9,3 - 9,4 7,2 - 7,3 8,7 - 8,8 7,9 - 8,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 RVI 8,8 d 3

40

2. Edition

En

PES 6 P 120 A 320 RS 419-2 RQV 275-950 PA 698
Komb.-Nr. 0 402 046 293
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84
company: RVI
engine: MIDS 062045
129 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing mark 9.5° after port closing cylinder 1

Port closing at prestroke 2,8-2,9 (2,75-2,95) RW = 9,0 - 12,0 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
500	7,9-8,0	10,4-10,6	0,5(0,9)			
275	4,3-4,5	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 8	200	min. 5,1	275	1,5-1,6
ca. 62	6,3	1010-1020					275	3,3 - 3,5	500	3,8-4,3
	4,0	1045-1075							800	6,4-6,7
	1200	0-1,0				280-395 (3a)			950	7,6

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
500	104,0-106,0 (101,0-109,0)	1010-1020*	950	122,0-128,0 (119,0-131,0)	100	150,0-170,0 (146,0-164,0)	500	7,9-8,0
							950	7,2-7,3
							750	7,5-7,7
					275	3,3-3,5 mm RW	800	7,3-7,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D17

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 120 A 320 LS 429 RQV 250-1100 PA 676
Komb.-Nr. 0 402 046 285

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.83
company: MAN
engine: D 2566 MKUL
235 kW/2200 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3.0-3.1 (2.95-3.15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13.0+0,0	21,5-21,7	0,5(0,9)			
250	6,3-6,5	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 12	100	min.7,9	300	1,7-2,0
							250	6,3-6,5	800	5,7-5,9
ca. 64	10,3	1140-1150							1100	8,3
	4,0	1230-1260				395-520				
	1350	0-1,0				(3a)				

Torque control travel a = 1,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	1,0 bar	1140-1150*	LDA	0,29 bar	100	205,0-225,0	750	13,0+0,1
750	215,0-217,0		500	134,0-140,0		(201,0-229,0)	1100	11,3+0,1
	(212,0-220,0)			(131,0-143,0)	250	12,0-18,0	860	12,6+0,2
1100	177,0-183,0		LDA	0 bar		(9,0-21,0)	985	11,7+0,3
	(174,0-186,0)		500	111,0-113,0				
650	206,0-212,0			(108,0-116,0)				
	(203,0-215,0)							

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
PES 6 P..LS 429 + RQV..PA 676	1,0	0	13,0-13,1
		0,29	9,7-9,8
		0,58	10,7-10,8
			12,4-12,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 9,5 a 3 **40**
3. Edition

En

PES 5 P 110 A 820 LS 434 RQV 300-1100 PA 594-1

Komb.-Nr. 0 402 045 024
1 - 3 - 5 - 4 - 2 je 72 ° ± 0,5 ° (± 0,75 °)

supersedes 7.83
company: Daimler-Benz
engine: OM 409
135 kW (184 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl.5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,0-11,2	0,4(0,8)			
300	8,1-8,3	1,2-1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 40	100	min. 9,5	250	1,0-1,3
							300	8,0-8,2	530	3,9-4,2
ca.60	10,0	1140-1150							820	5,5-5,8
	4,0	1175-1205				320-438			1100	8,2
	1300	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	110,0-112,0 (107,0-115,0)	1140-1150*	600	91,0-93,0 (88,0- 96,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D20

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 DAF 11,6 u 5

1. Edition

En

PE 6 P 110 A 720 RS 441 RSV 250-1200 P 5 A 509-1

Komb.-Nr. 0 401 876 317

supersedes

company DAF

engine DHS 825

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	13,7-14,0	0,4 (0,75)			
250	5,0-5,2	0,7-1,2	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	4,6	1000	12,4-12,5
	X = 5,0						250	5,0-5,2	400	12,4-12,6
							525-585	= 2,0	300	12,7-13,2
ca. 58 (2a)	11,2	1240-1250								
	4,0	1330-1360								
	1500	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ( ): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 136,5-139,5 (134,0-142,0)	1240-1250*	LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-285,0 (241,0-289,0)	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D21

D21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PE 6 P.. RS 441 + RSV..P5A 509-1	0,7	0 0,36 0,27	12,2-12,3 10,1-10,2 11,7-11,8 10,8-11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 110 A 820 LS 442 ROV 300-1100 PA 594-4

Komb.-Nr. 0 402 046 229

supersedes 7.84
company Daimler-Benz
engine OM 407
176 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC)

Rotational speed rev/m. 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,[illegible]	12,9-13,1	0,4(0,75			
300	7,8-8,0	1,4-2,0	0,45(0,75)			
600	-	s. Sp.4 u. 5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca.30	100	min.9,5	250	1,0-1,2
ca.61	10,7	1140-1150					300	7,8-8,0	530	3,5-3,7
	4,0	1180-1210							820	5,0-5,4
	1300	0 - 1,0				340-470			1100	7,7
						(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1100	129,0-131,0 (126,5-133,5)	1140-1150*	600	113,0-117,0 (110,0-120,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH

Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 DAF 8.3o 12

1. Edition

En

PE 6 P 100 A 720 RS 447-1 RSV 250-750 P 7A 507-1

Komb.-Nr.0 401 876 299

supersedes

compan DAF

engine DHT 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
750	12,7+0,1	14,3-14,5	0,35(0,6)			
250	5,3-5,5	0,9-1,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 17	250	5,4	-	-
	x = 3,75						250	5,3-5,5		
ca. 44 (2a)	11,7	790-795					250-295	=2,0**		
	4,0	810-825								
	950	0,3-1,7 **								

Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
750	142,5-144,5 (140,5-146,5)	790-795 *	-	-	250	9,0-13,0 (6,5-15,5)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D24

D24

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 8,3 o11

1. Edition

En

PE 6 P 100 A 720 RS 447 RSV250-1200 P 5 A 509-1

Komb.-Nr. 0 401 876 316

supersedes
company DAF
engine DHT 825
162,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	11,9-12,1	0,35 (0,6)			
250	5,3-5,5	0,8-1,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	4,9	1000	11,6-11,7
	X = 5,0						100	min. 7,0	400	11,6-11,8
							250	5,3-5,5	300	11,9-12,4
ca. 58	10,4	1240-1250					540-600	= 2,0		
(2a)	4,0	1325-1355								
	1530	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1240-1250*	LDA	0 bar	100	210,0-230,0	-	-
1000	118,5-120,5 (116,5-122,5)		600	92,5-96,5 (90,0-99,0)		(206,0-234,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

E1

E1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6P..RS 447 + RSV..P5A 509-1	0,7	0 0,32 0,23	11,4-11,5 10,4-10,5 11,1-11,2 10,5-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e 2

1. Edition

En

PES 6 P 110 A 720 LS 455
Komb.-Nr. 0 402 046 238

RQV 250-1100 PA 580

supersedes -
company: MAN
engine: D 2566 MTE
206,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 12 (3a)	100	min.8,9	300	1,4-1,7
ca. 46	11,4 4,0 1350	1140-1150 1210-1240 0-1,0					250 340-400	7,3-7,5 =2,0	850 1100	5,3-5,6 7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 146,0-149,0 (143,5-151,5)	1140-1150*	LDA 500 LDA 500	0,2 bar 123,0-127,0 (120,0-130,0) 0 bar 110,0-113,0 (107,5-115,5)	100	225,0-245,0 (221,0-249,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH Geschäftsbereich KH. Kundendienst, Kfz-Ausrüstung

E3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = ○ bar	Control rod travel diminution / difference mm (1)
PES 6 P..LS 455 mit RQV..PA 580	0,7	0 0,20	12,4-12,5 11,3-11,4 11,8-11,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 e
2. Edition
En

PES 6 P 110 A 720 LS 455 RQV 250-1100 PA 674
Komb.-Nr. 0 402 046 307

supersedes 7.84
company: MAN
engine: D 2566 MTE
184 kW/2200 min^{-1}
MAN-Nr. 2-7323

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,8+0,1	15,9-16,2	0,4(0,75)			
250	6,9-7,1	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 16 (3a)	100	min.8,5	300	1,5-1,8
ca. 52	10,5 4,0 1350	1140-1150 1205-1235 0-1,0					250 340-400	6,9-7,1 = 2,0	800 1100	5,1-5,4 8,8

Torque control travel a = 1,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 800	0,7 bar 159,0-162,0 (156,5-164,5)	1140-1150*	LDA 650	0,7 bar 160,0-164,0 (157,0-167,0)	100	215,0-235,0 (211,0-239,0)	800 1100 900	12,8+0,1 11,5+0,1 12,4+0,2
LDA 1100	0,7 bar 136,0-140,0 (133,0-143,0)		LDA 500	0 bar 97,0-100,0 (94,5-102,5)			1000	11,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

E5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..LS 455 + RQV..PA 674	0,70	0 0,28 0,11	12,8-12,9 10,2-10,3 12,1-12,2 10,7-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MAN 11,4 e 1

2. Edition

En

PES 6 P 110 A 720 LS 455 RQV 250-1100 PA 675

Komb.-Nr. 0 402 046 284

superseded 7.84
company MAN
engine D 2566 MTE
206 kW/2200 min^{-1}
Excavator
MAN-Nr. 2-7235

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,7-15,0	0,4 (0,75)			
250	7,0-7,2	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 13	100	min.8,6	300	1,4-1,7
ca. 46	11,1	1140-1150					250	7,0-7,2	800	5,0-5,2
	4,0	1220-1250					340-400 = 2,0		1100	7,9
	1350	0-1,0				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation, intermediate speed (2b) (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	147,0-150,0 (144,5-152,5)	1140-1150*	-	-	100	225,0-245,0 (221,0-249,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

PES 6 P 110 A 720 LS 455 RQ 250/1100 PA 743
Komb.-Nr. 0 402 046 312

supersedes-
company MAN
engine D 2566 MTE
206,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	17,8-18,1	0,4 (0,75)			
250	6,7-6,9	1,1-1,6	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	12,1	1145-1160	250	6,8	100	min. 8,3	1100	13,1-13,2
				4,0	1205-1235			250	6,7-6,9	600	13,1-13,3
VH =	max. 46 °			1350	0 - 1,0			340-380	= 2,0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	178,0-181,0 (175,5-183,5)				100	225,0-245,0 (221,0-249,0)

Checking values in brackets

10.85

PES 6 P 120 A 720 LS 457 RQ 750 PA 566

superseded 7.84
company MAN
engine D 2566 MLE
198 kW/1500 min^{-1}
MAN-Nr. 2-7341

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
Komb.-Nr. 0 402 046 250

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,9)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750-755 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	202,0-204,0 (199,0-207,0)	-	-	-	-	-

Checking values in brackets

11.85

E9

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 c 1

2. Edition

En

PES 6 P 120 A 720 LS 457 RQ 750 PA 661
Komb.-Nr. 0 402 046 267
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84
company: MAN
engine: D 2566 MLE
198 kW/1500 min^{-1}
MAN-Nr. 2-7341

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings ③

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Difference cm^3/100 strokes 4	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,8)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,5 4,0 900	750-755 776-789 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750 - 755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm^3/-1000 strokes 2	rev/min 3	rev/min 4	cm^3/-1000 strokes 5	rev/min 6	Control rod travel cm^3/1000 strokes / mm 7
700	202,0-204,0 (199,0-207,0)	-	-	-	-	-

Checking values in brackets

11.85

E10

PES 6 P 120 A 720 LS 470 RQ 250/1100 PA 658-9
Komb.-Nr. 0 402 046 308
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.84
company MAN
engine D 2866 KUH
265 kW/2200 min^{-1}
MAN-Nr. 2-7530

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Difference cm^3/100 strokes 4	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,5	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH=	19,2-20,8 max.46°	600	20,0	10,3 4,0 1300	1145-1160 1180-1210 0-1,0	250	5,3	100 250 315-355	min.6,8 5,2-5,4 =2,0	750 1100 935 990	12,5-12,6 11,3-11,4 12,4-12,6 11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,65 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm^3/-1000 strokes 2	rev/min 3	rev/min 4	cm^3/-1000 strokes 5	rev/min 6	cm^3/1000 strokes / Control rod travel mm 7
LDA 750 LDA 1100	1,0 bar 238,0-240,0 (235,0-243,0) 1,0 bar 213,0-219,0 (210,0-222,0)	-	LDA 650 LDA 500	1,0 bar 239,0-245,0 (236,0-248,0) 0 bar 139,0-141,0 (136,0-144,0)	100	225,0-245,0 (221,0-249,0)

Checking values in brackets

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P .. LS 470 +RQ .. PA 658-9	1,0	0 0,10 0,40	12,5-12,6 9,3-9,4 9,6-9,7 11,0-11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PES6 P 120 A 720 LS 470 RQ 250/1100 PA 684
Komb.-Nr. 0 402 046 288
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 4.85
company: MAN
engine: D 2866 KF
265 kW/2200 min^{-1}
MAN-Nr. 2-7355

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-oil 4)

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min.6,8	750	12, -12,
VH = max. 46°				4,0	1180-1210			250	5,2-5,4	1100	11,3-11,4
				1300	0-1,0			315-355	= 2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	-	LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 214,0-218,0 (211,0-221,0)		LDA 500	0,4 bar 188,0-200,0 (185,0-203,0)		
			LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

11.85

E13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..LS470 + RQ..PA684	1,0	0 0,12 0,40	12,5 - 12,6 9,3 - 9,4 9,6 - 9,7 11,0 - 11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PES 6 P 120 A 720 LS 270-1 RQ 250/1100 PA 679
Komb.-Nr. 0 402 046 289
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 12.83
company: MAN
engine: D 2866 KUL
265 kW/2200 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	23,0-23,2	0,5(0,9)			
250	5,6-5,8	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,9	1145-1160	250	5,5	100	min.7,2	750	13,0-13,1
VH= max. 46°				4,0	1185-1215			250	5,6-5,8	1100	11,9-12,0
				1350	0-1,0			340-380	=2,0	965	12,6-12,8
										1010	12,1-12,4

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 750	1,0 bar 230,0-232,0 (227,0-235,0)	-	LDA 500	0,4 bar 179,0-181,0 (176,0-194,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 218,0-224,0 (215,0-227,0)		LDA 500	0 bar 128,0-130,0 (125,0-133,0)	250	12,0-18,0 (9,0-21,0)

Checking values in brackets

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution / difference mm (1)
PES 6 P..LS 470-1 +RQ..PA 679	1,0	0 0,13 0,40	12,7-12,8 9,4-9,5 9,7-9,8 11,1-11,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9a3
2. Edition
En

PES 6 P 120 A 720 LS 470-1 RQV 250-1100 PA 707
Komb.-Nr. 0 402 046 296
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 6.84
company: MAN
engine: D 2866 KUL
265 kW/2200 min^{-1}
MAN-Nr. 2-7512

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	23,0-23,2	0,5 (0,9)			
250	5,4-5,6	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2 -17,8	-	-	-	ca. 11	100	min. 7,0	300	1,7-2,0
ca. 65	10,9	1140-1150					250	5,4-5,6	850	6,0-6,2
	4,0	1225-1255					365-425=2,0		1100	8,3
	1350	0 - 1,0				(3a)				

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 230,0-232,0 (227,0-235,0)	1140-1160*	LDA 650	1,0 bar 231,0 -237,0 (228,0-240,0)	100	225,0 -245,0 (221,0 -249,0)	750	12,7+0,1
							1100	11,9+0,1
							935	12,5+0,2
LDA 1100	1,0 bar 218,0-224,0 (215,0-227,0)		LDA 500	0 bar 128,0-130,0 (125,0-133,0)			1010	12,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

E17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 P. LS 470-1	1,0		12,7 - 12,8
+ RQV. PA 707		0	9,4 - 9,5
		0,40	11,2 - 11,3
		0,19	9,9 - 10,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,9 a 7
En 1. Edition

PES 6 P 120 A 720/3 LS 470-2 RQ 250/1100 PA 684
Komb.-Nr. 0 402 036 050
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: MAN
engine: D 2866 KF/K 265,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8 - 24,0	0,5 (0,9)			
250	5,2-5,4	1,2 - 1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [redacted].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	5,3	100	min. 6,8	750	12,7-12,8
VH	= max. 46°			4,0	1180-1210			250	5,2- 5,4	1100	11,3-11,4
				1300	0 - 1,0			315-	355= 2,0	935	12,4-12,6
										990	11,7-12,0

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/–1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/–1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 750	1,0 bar 238,0 - 240,0 (235,0 - 243,0)		LDA 650	1,0 bar 239,0 - 245,0 (236,0 - 248,0)	100	225,0 - 245,0 (221,0 - 249,0)
LDA 1100	1,0 bar 214,0 - 218,0 (211,0 - 221,0)		LDA 500	0,4 bar 188,0-200,0 (185,0 - 203,0)	250	12,0 - 18,0 (9,0 - 21,0)
			LDA 500	0 bar 139,0 - 141,0 (136,0 - 144,0)		

Checking values in brackets

10.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
PES 6 P..LS 470-2 +RQ .. PA 684	1,0	0 0,12 0,40	12,5 - 12,6 9,3 - 9,4 9,6 - 9,7 11,0 - 11,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MAN 11,9 a 8

1. Edition

En

PES 6 P 120 A 720/3 LS 470-2 RQV 250-1100 PA 700
Komb.-Nr. 0 402 036 051

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company: MAN
engine D 2866 KF/K 265,0 kW

Test to ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5 (0,9)			
250	5,2-5,4	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 10 (3a)	100	min. 6,8	300	1,7-2,0
							250	5,2-5,4	850	6,0-6,2
ca. 62	10,3	1140-1150					360-420	= 2,0	1100	8,3
	4,0	1225-1255								
	1350	0 - 1,0								

Torque control travel a = 1,15 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	1,0 bar		LDA	1,0 bar	100	225,0-245,0	750	12,5+0,1
750	238,0-240,0		650	239,0-245,0		(221,0-249,0)	1100	11,3+0,1
	(235,0-243,0)			(236,0-248,0				
LDA	1,0 bar		LDA	0,4 bar	250	12,0-18,0	900	12,1+0,2
1100	213,0-219,0		500	191,0-197,0		(9,0-21,0)	1000	11,5+0,3
	(210,0-222,0)			(188,0-200,0				
			LDA	0 bar				
			500	139,0-141,0				
				(136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

E21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P.. LS 470-2 + RQV .. PA 700	1,0		12,5-12,6
		0	9,3-9,4
		0,40	11,1-11,2
		0,24	10,2-10,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,9 a 9
1. Edition
En

PES 6 P 120 A 720/3 LS 470-3 RQ 250/1100 PA 679
Komb.-Nr. 0 402 036 047
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes –
company MAN
engine D 2866 KUL
265,0 kW

1 688 901 019 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2.	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7±0,1	23,0 - 23,2	0,5 (0,9)			
250	5,6-5,8	1,2 - 1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,9	1145-1160	250	5,7	100	min. 7,2	750	13,0-13,1
VH =	max. 46°			4,0	1185-1215			250	5,6- 5,8	1100	11,9-12,0
				1350	0 - 1,0			340-	380= 2,0	965	12,6-12,8
										1010	12,1-12,4

Torque-control travel on flyweight assembly dimension a = 0,40 mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes mm 7
LDA	1,0 bar		LDA	1,0 bar	100	225,0 - 245,0
750	230,0 - 232,0		650	231,0 - 237,0		(221,0 - 249,0)
	(227,0 - 235,0)			(228,0 - 240,0)		
LDA	1,0 bar		LDA	0,4 bar	250	12,0 - 18,0
1100	218,0 - 224,0		500	179,0 - 191,0		(9,0 - 21,0)
	(215,0 - 227,0)			(176,0 - 194,0)		
			LDA	0 bar		
			500	128,0 - 130,0		
				(125,0 - 133,0)		

Checking values in brackets

10.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PES 6 P..LS 470-3 + RQ..PA 679	1,0	0 0,13 0,40	12,7 - 12,8 9,4 - 9,5 9,7 - 9,8 11,1 - 11,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,4 f
2. Edition

En

PES 6 P 100 A 720 LS 471 RQ 250/1100 PA 685
Komb.-Nr. 0 402 046 287

superseded 7.84
company: MAN
engine: D 2566 UH/200
147 kW/2200 min^{-1}
MAN-Nr. 2-7454

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,3+0,1	9,4-9,6	0,35(0,6)			
250	4,9-5,1	1,2-1,8	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	11,3 4,0 1350	1145-1160 1215-1245 0-1,0	250	5,0	100 250 340-380	min.6,5 4,9-5,1 =2,0	700 1100	12,4-12,5 12,3-12,5

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
750	94,0-96,0 (92,0-98,0)	-	500 1100	85,0-88,0 (82,5-90,5) 100,0-104,0 (97,5-106,5)	100	115,0-135,0 (111,0-139,0)

Checking values in brackets

11.85

F1

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 P 120 A 720/3 LS 470-3 RQV 250-1100 PA 707
Komb.-Nr. 0 402 036 048

supersedes -
company: MAN
engine: D 2866 KUL
265,0 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,7+0,1	23,0-23,2	0,5 (0,9)			
250	5,4-5,6	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 11	100	min. 7,0	300	1,7-2,0
ca. 65	10,9	1140-1150					250	5,4-5,6	850	6,0-6,2
	4,0	1225-1255					365-425	= 2,0	1100	8,3
	1350	0 - 1,0								

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 230,0-232,0 (227,0-235,0)		LDA 650	1,0 bar 231,0-237,0 (228,0-240,0)	100	225,0-245,0 (225,0-245,0)	750 1100	12,7+0,1* 11,9+0,1*
LDA 1100	1,0 bar 218,0-224,0 (215,0-227,0)		LDA 500	0,4 bar 182,0-188,0 (179,0-191,0)	250	12,0-18,0 (9,0-21,0)	935 1010	12,5+0,2* 12,0+0,3*
			LDA 500	0 bar 128,0-130,0 (125,0-133,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

F2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PES 6P.LS470-3 + RQV.. PA 707	1,0	0 0,40 0,19	12,7-12,8 9,4-9,5 11,2-11,3 9,9-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F3

F3
En

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MAN 11,9 a 12 **40**

1. Edition

En

PES 6 P 120 A 720/3/8 470-3 RQV 300-1100 PA 707-1
Komb.-Nr. 0 402 036 053

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -
company MAN
engine D 2866 LUL
243,0 kW
MAN-Nr. 2-7738

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	20,7-20,9	0,5 (0,9)			
300	4,9-5,1	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 12 (3a)	100	min.6,5	300	1,7-2,0
ca. 64	10,4	1140-1150					300	4,9-5,1	850	6,0-6,3
	4,0	1225-1255					380-440	= 2,0	1100	8,2
	1350	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4i): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 207,0-209,0 (204,0-212,0)	1140-1150 *	LDA 1100	1,0 bar 216,0-222,0 (213,0-225,0)	100	225,0-245,0 (221,0-249,0)		
			LDA 500	0,44 bar 181,0-191,0 (178,0-194,0)				
			LDA 500	0 bar 130,0-132,0 (127,0-135,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

F4

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

F4

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PES 6P..LS 470-3 + RQV..PA 707-1	1,0	0 0,23 0,44	11,4-11,5 9,0-9,1 9,3-9,4 10,6-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (2) and Governors

40

WPP 001/4 MAN 11,4 g
2. Edition

En

PES 6 P 110 A 720 LS 477 RQ 250/1100 PA 685
Komb.-Nr. 0 402 046 304

supersedes 7.84
company: MAN
engine: D 2866 UH/240
177 kW/2200 min^{-1}
MAN-Nr. 2-7539

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) Cyl. 6.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,7+0,1	12,3-12,6	0,4 (0,75)			
250	6,0-6,2	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation				Idle speed regulation				Torque control (3)	
		Setting point		Test specifications (4)		Setting point		Test specifications (5)			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,7 4,0 1350	1145-1160 1210-1240 U-1,0	250	6,1	100 250 370-410	min.7,6 6,0-6,2 =2,0	1100 500	11,7-11,8 11,7-11,9

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
800	123,0-126,0 (120,5-128,5)	-	1100	127,0-133,0 (124,0-136,0)	100	110,0-130,0 (106,0-134,0)
			500	113,0-119,0 (110,0-122,0)	250	15,0-20,0 (12,5-22,5)

Checking values in brackets

11.85

F6

F6

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 11,4 g 1

1. Edition

En

PES 6 P 110 720 LS 477 RQ 250/1100 PA 685-1

Komb.-Nr. 0 402 046 310

supersedes

company MAN

engine D 2566 UH/200
147,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,5+0,1	9,1 - 9,4	0,4 (0,75)			
250	6,0-6,2	1,5-2,0	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	9,5 4,0 1300	1145-1160 1200-1230 0 - 1,0	250	6,1	100 250 370-410	min. 7,6 6,0-6,2 = 2,0	1100 500	10,7-10,8 10,7-10,9

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1145-1160 min-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
800	91,0-94,0 (88,5-96,5)		1100	103,0-107,0 (100,0-110,0)	100	110,0-130,0 (106,0-134,0)
			500	81,0-85,0 (78,0-88,0)		

Checking values in brackets

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

F7

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MAN 11,9 b

1. Edition

En

PES 6 P 110 A 720 LS 477-1 RQV 300-1100 PA 667-1

Komb.-Nr. 0 402 046 325

supersedes

company: MAN

engine: D 2866 E
177,0 kW
MAN-Nr. 2-7681

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,2+0,1	12,3-12,6	0,4 (0,75)			
300	5,6-5,8	1,5-2,0	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca.17	100	min.7,2	300	1,2-1,4
							300	5,6-5,8	500	3,3-3,6
ca. 53	11,2	1140-1150							900	5,9-6,6
	4,0	1195-1225				330-435			1100	7,6
	1400	0-1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
800	123,0-126,0 (120,5-128,5)	1140-1150*	1100	128,0-132,0 (125,0-135,0)	100	110,0-130,0 (106,0-134,0)	-	-
			500	118,0-122,0 (115,0-125,0)	300	15,0-20,0 (12,5-22,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9 c

1. Edition

En

PES 6 P 120 A 720 RS 487 RQV 400-1050 PA 750
Komb.-Nr. 0 402 046 314
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes
company MAN
engine D 2866 LUE
250,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,4+0,1	19,4-19,6	0,5(0,9)			
400	4,4-4,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	ca. 18	100	min.7,5	375	1,1-1,3
ca. 54	9,4	1090-1100					400	4,2-4,4	800	4,6-4,9
	4,0	1135-1165							1050	7,8
	1300	0-1,0				415-515 (3a)				

Torque control travel a = mm

C. Settings for Fuel injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1050	1,0 bar 194,0-196,0 (191,0-199,0)	1090-1100*	LDA 700	1,0 bar 178,0-184,0 (175,0-187,0)	100	225,0-245,0 (221,0-249,0)	-	-
			LDA 500	1,0 bar 171,0-177,0 (168,0-180,0)	400	12,0-18,0 (9,0-21,0)		
			LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

F9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 P..RS 487 + RQV..PA 750	1,0	0 0,30 0,36	10,4-10,5 9,3-9,4 9,6-9,7 10,0-10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 9,6 k
4. Edition
En

Testoil-ISO 4113

PE 6 P 100 A 320 LS 805 RQ 1100 PA 440 R

Komb.-Nr. 0 401 846 408

supersedes 2.82
company: Daimler-Benz
engine: OM 401
116 kW (158 PS)

6 - 3 - 5 - 2 - 4 - 1 ±0,50°
0 -45 -120-165-240-285° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,4	10,0 - 10,2	0,3(0,6)			
	+0,1					
350	7,8-8,0	2,3 - 2,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
-	9,4 4,2 1300	1120-1125 1160-1170 0 - 1	-	-	-	- (3a)	-	-	-	-

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed rev/min (4a) 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	100,0-102,0 (98,0-104,0)	1120-1125*	-	-	100 - 1165	110,0-130,0 --- 4,2 mm RW dispersion max.4 (6)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

F11

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 12,8 b 3

2. Edition

En

PE 8 P 100 A 320 LS 810 RQV 300-1250 PA 227 R

supersedes 9.84

company: Daimler-Benz

engine OM 402

Komb.-Nr. 0 401 848 041

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

Test to ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4-3,5 (3,35-3,55) mm (from BDC) cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 0
1250	10,3+0,1	10,0-10,2	0,3(0,6)			
300	7,4-7,6	1,7-2,3	0,3(0,5)			
600	-	C, Sp. 4 u. 5	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	ca. 12	100	min.9,0	250	0,7-1,0
							300	7,4-7,6	550	3,3-3,5
ca. 66	9,3	1290-1300							850	4,7-5,1
	4,0	1330-1360							1250	8,0
	1450	0-1,0				300-600 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	100,0-102,0 (98,0-104,0)	1290-1300*	600	75,0-80,0 (72,5-82,5)	100	120,0-140,0 (116,0-144,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

Test Specifications Fuel Injection Pumps ② and Governors

PE 12 P 110 A 520 LS 838-1 RQ 900 PA 663-6
Komb.-Nr. 0 401 840 098

supersedes
company MAN
engine D 2542 MTE

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	15,6-15,9	0,4(0,75			
250	3,8-4,0	1,4-1,9	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point ④		Test specifications		Idle speed regulation Setting point ⑤		Test specifications		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,4 4,0 1000	900-905 932-946 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900-905 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
850	156,0-159,0 (153,0-161,5)	-	-	-	-	-

Checking values in brackets

10.85

F13

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 a 5

En 2. Edition

PE 10 P 110 A 520/5 LS 846 RQV 250-1150 PA 673-1

Komb.-Nr. 0 401 849 183

1- 8- 7- 6- 3- 5- 2- 10- 9- 4

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 11.84

company MAN

engine D 2540 MTF
310 kW/2300 min^{-1}
MAN-Nr. 2-7372

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,5+0,1	13,2-13,5	0,4(0,75)			
250	7,0-7,2	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1170	15,2-17,8	-	-	-	ca. 12 (3a)	100	min.8,6	350	2,0-2,5
ca. 65	10,5	1190-1200					250	7,0-7,2	850	6,5-6,7
	4,0	1315-1345					400-460	=2,0	1150	8,4
	1450	0-1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	0,9 bar 132,0-135,0 (129,5-137,5)	1190-1200*	LDA 750	0,9 bar 122,0-126,0 (119,0-129,0)	100	150,0-170,0 (146,0-174,0)	-	-
			LDA 500	0 bar 115,0-118,0 (112,5-120,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

F14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 10 P.. LS 846 +RQV.. PA 673-1	0,90	0 0,32	11,5-11,6 11,1-11,2 11,3-11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors ②

40

WPP 001/4 MAN 17,4 b 9

2. Edition

En

PE 10 P 120 A 520/5 LS 850-1 RQ 750 PA 663-3

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ± 0,5 ° (± 0,75 °)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 11.84
company MAN
engine D 2540 MLE
283 kW/1500 min-1
Komb.-Nr. 0 401 849 174
MAN-Nr. 2-7247

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	19,5-19,7	0,5(0,9)			
250	4,4-4,6	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0 950	750-755 776-789 0 - 1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	195,0-197,0 (192,0-200,0)	-	-	-	-	-

Checking values in brackets

11.85

Test Specifications Fuel Injection Pumps ① and Governors

PE 8 P 110 A 520 LS 851
Komb.-Nr. 0 401 848 083

RQV 250-1150 PA 670-3

supersedes
company MAN
engine D 2848 T
245,0 kW

Test-ID SO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,8+0,1	14,3-14,5	0,4(0,75)			
250	4,9-5,1	1,8-2,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1220	15,2-17,8	-	-	-	ca. 9	100	min.6,5	250	1,1-1,3
ca. 62	9,8	1190-1200					250	4,9-5,1	450	2,9-3,3
	4,0	1270-1300							900	5,7-6,1
	1450	0-1,0				280-390			1150	7,8
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	1,0 bar 143,0-145,0 (140,5-147,5)	1190-1200*	LDA 700	1,0 bar 140,0-144,0 (137,0-147,0)	100	190,0-210,0 186,0-214,0)	-	-
			LDA 500	0 bar 108,0-110,0 (105,5-112,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

F17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PE 8 P..LS 851 + RQV..PA 670-3	1,0	0 0,29 0,23	10,8-10,9 9,6-9,7 10,5-10,6 9,9-10,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PE 8 P 110 A 320 LS 851 RQ 250/1150 PA 688
Komb.-Nr. 0 401 848 082
1-8-7-2-6-3-5-4 je 45° ± 0,5° (± 0,75°)

superseded 12.84
company MAN
engine D 2848 T
245 kW/2300 min^{-1}
MAN-Nr. 2-7353

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,8+0,1	14,3-14,5	0,4(0,75)			
250	4,9-5,1	1,8-2,4	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,8	1195-1210	250	5,0	100	min.6,5	1150	10,8-10,9
VH = max. 46°				4,0	1280-1310			250	4,9-5,1	700	10,8-11,0
				1450	0-1,0			310-350 = 2,0			

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1195-1210 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	1,0 bar	-	LDA	1,0 bar	100	185,0-205,0
1150	143,0-145,0		700	137,0-141,0		(181,0-209,0)
	(140,5-147,5)			(134,0-144,0)	250	18,0-24,0
			LDA	0 bar		(15,5-26,5)
			500	108,0-110,0		
				(105,5-112,5)		

Checking values in brackets

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE8P..LS851 + RQ..PA688	1,0	0 0,29 0,23	10,8-10,9 9,7-9,8 10,5-10,6 9,9-10,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F20

F20
En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 i 1

2. Edition

En

PE 6 P 120 A 720 RS 3069 RQV 300-1200 PA 727

Komb.-Nr. 9 400 087 309

supersedes 3.85
company: Fiat Diesel
engine: 8210.11
220 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,55) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	20,1-20,3	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1045	15,2-17,8	-	-	-	ca. 10	100	min.7,6	325	1,2-1,4
ca. 65	11,4	1040-1050					300	6,0-6,2	450	2,6-3,1
	4,0	1115-1145							800	5,7-6,0
	1250	0-1,0							1000	7,9
						350-455 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 201,0-203,0 (198,0-206,0)	1040-1050*	LDA 1000	0 bar 158,0-160,0 (155,0-163,0)	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3069 +RQV..PA 727	0,70	0 0,36 0,31	12,4-12,5 10,0-10,1 11,6-11,7 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DEE 10,1 b

2. Edition

En

US-PES 6P 110 A 720 RS 3086 US-RSV 400-1050 PO/492-1 supersedes 4.85

Komb.-Nr. 9 400 231 174 company John Deere

Values apply to fuel-injection test tubing 9 681 271 004 engine 6619 A 215 kW

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,45-3,55 (3,40-3,60) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1050	13,9+0,1	21,4-21,6	0,4 (0,75)			
400	6,0-6,2	1,9-2,5	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	400	5,6	1050	13,9-14,0
	X =						400	6,0-6,2	700	14,3-14,6
ca. 42 (2a)	12,9	1090-1100					540-600	= 2,0		
	4,0	1185-1215								
	1280	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1050	1,0 bar 213,5-215,5 (210,5-218,5)	1090-1100*	LDA 700	1,0 bar 223,5-226,5 (220,0-230,0)	100	135,0-155,0	400	6,1
			LDA 500	0 bar 136,5-139,5 (133,0-143,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
US-PES6P..RS 3086 +RSV.. P0/492-1	0,47	0,26	14,1 - 14,2 12,9 - 13,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,0 i 2
2. Edition
En

PE 6 P 110 A 320 LS 3805-10 RQV 300-1150 PA 524-6
Komb.-Nr. 0 401 846 756

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ± 0,5° (± 0,75 °)

supersedes 4.85
company: Daimler-Benz
engine: OM 421
148 kW (201 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,6+0,1	12,7-12,9	0,4 (0,8)			
300	9,1-9,3	1,6-2,2	0,4 (0,7)			
600	-	C, Sp. 4 u. 5	0,6 (0,8)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 23	100 300 430-490	min.10,6 9,1-9,3 = 2,0	300 600 1200 1260	1,6-1,8 5,8-6,2 8,2-8,4 10,0
ca. 55	11,6 4,0 1500	1190-1200 1240-1270 0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	127,0-129,0 (124,0-132,0)	1190 - 1200	600	104,5-108,5 (101,5-111,5	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4 86

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors

WPP 0C1/4 KHD 9,6 q
2. Edition

PES 6 P 110 A 720 RS 3104 RQV 300-1150 PA 549-2
Komb.-Nr. 0 402 046 761

supersedes 5.85
company: KHD
engine: BF 6L 413 FRC
220 kW/2300 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	14,4+0,1	16,9-17,1	0,4(0,75)			
300	7,8-8,0	1,6-2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1225	15,2-17,8	-	-	-	ca. 26	100	min. 9,3	250	0,5-0,8
							300	7,8-8,0	550	3,6-4,2
ca. 60	13,4	1190-1200							850	5,4-5,7
	4,0	1315-1345							1150	7,8
	1450	0 - 1,0				320-500 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	0,9 bar 169,0-171,0 (166,0-174,0)	1190-1200 *	LDA 600	0,9 bar 171,0-175,0 (168,0-178,0	100	135,0-155,0 (131,0-159,0	-	-
			LDA 450	0 bar 123,0-125,0 (120,0-128,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

G2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 450 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
PES 6 P..RS 3104 + RQV..PA 549-2	0,90	0 0,5 0,36	14,4-14,5 12,5-12,6 13,9-14,0 12,7-12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,0 m
5. Edition
En

PE 6 P 110 A 320 LS 3814 RQV 350-1150 PA 378
Komb.-Nr. 0 401 846 741

supersedes 3.85
company: Daimler-Benz
engine: OM 421
159 kW

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

Note VDT-I-401/102
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery ** cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,7+0,1	12,3-12,5	0,4(0,8)	12,7+0,1	13,4-13,6	
350	8,2-8,4	1,3-1,9	0,4(0,7)	8,2-8,4	1,3-1,9	
600						
1150	-	-	0,6(0,9)	-	C, Sp. 4 u.5	

* with return throttle (1) ** without return throttle (2)

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 16	100	min. 8,5	300	0,6-0,9
ca.66	11,7	1180-1190					350	8,2 - 8,4	580	3,6-3,7
	4,0	1285-1315							870	5,2-5,3
	1400	0-1,0				375-485			1150	7,6
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
(1) 1130	123,0-125,0 (120,0-128,0)	1170-1180*	-	-	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1150	15,2-17,8		-	-	-	ca. 16	100	min.8,5	300	0,6-0,9
								350	8,2-8,4	580	3,6-3,7
ca. 66	11,7	1180-1190								870	5,2-5,3
	4,0	1285-1315								1150	7,6
	1400	0-1,0					375-485				
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2)		1170-1180*	1150	93,0-97,0	100	140,0-160,0	-	-
1150	134,0-136,0			(90,0-100,0)		(136,0-164,0)		
	(131,5-138,5)			**				
			600	116,0-120,0				
				(113,0-123,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

**Reduced-delivery stop

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1) and Governors

40

WPP 001/4 MB 14,6 v

1. Edition

En

PE 8 P 120 A 320 LS 3816-10 RQV 350 1150 PA 778 K

Komb.-Nr. 0 401 848 771

supersedes

company Daimler-Benz

engine OM 422 243,0 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 1-8-7-6-3-5-4 je 45° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,9+0,1	15,6-15,8	0,5(0,9)			
350	4,9-5,1	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1175	15,2-17,8	-	-	-	ca. 10	100	min.6,0	300	0,2-0,4
							350	4,5-4,6	580	3,3-3,5
ca. 61	9,9	1190-1200							870	4,7-4,9
	4,0	1240-1270				370-480			1150	8,0
	1400	0-1,0								
						(3a)				

Torque control travel a = 1,60 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1150	156,0-158,0 (153,0-161,0)	1190-1200*	600	128,0-132,0 (125,0-135,0)	100	140,0-160,0 (136,0-164,0)	1150	10,9+0,2
							600	9,3+0,2
			900	146,0-151,0 (143,0-154,0)			900	10,1+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrustung.

10.85

PE 10 P 110 A 320 LS 3818-12 RQV 350-1150 PA 678-1
Komb.-Nr. 0 401 849 723
1-8-7-6-3-5-2-10-9-4
0-27-72-99-144-171-216-243-288-315 ° ± 0,5 ° (± 0,75 °)

supersedes
company Daimler-Benz
engine OM 423
261 kW

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	12,2-12,4	0,4 (0,8)			
350	8,5-9,7	1,4-2,2	0,4 (0,7)			
600/900	-	C, Sp. 4 u. 5	0,6 (0,9)			
1150	-	C, Sp. 1 u. 2	0,6(0,75)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 14	100	min.10,2	300	1,2-1,4
							350	8,5-8,7	580	3,6-3,9
ca. 64	11,0	1190-1200							870	5,2-5,5
	4,0	1240-1270							1150	7,8
	1400	0 - 1,0								
						350-500 (3a)				

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,0-127,0)	1190-1200 *	600	110-114,0 (107,0-117,0)	100	150,0-170,0 (146,0-174,0)	1150	12,0+0,1
							600	12,7+0,2
							900	12,4+0,2
1150	92,0-94,0 (89,0-97,0)		900	118,0-123,0 (115,0-126,0)				
	**							

Checking values in brackets

* 1 mm less control rod travel than col 2

** Reduced-delivery stop

12.85

57

PE 12 P 120 A 320 LS 3819-14 RSV 350-1150 PA 493-5
Komb.-Nr. 0 401 840 730
1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315 ° ± 0,5 ° (± 0,75 °)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes _
company: Daimler-Benz
engine: OM 424 A
390 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	15,9-16,1	0,5 (0,8)			
350	4,8-5,0	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 14	100	min.8,5	300	1,9-2,1
							350	6,9-7,1	580	3,5-3,7
ca. 64	10,1	1190-1200							870	5,2-5,4
	4,0	1280-1310							1150	7,7
	1375	0 -1,0				400-600 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	0,6 bar 159,0-161,0 (156,0-164,0)	1190-1200 *	LDA 650	0,6 bar 160,0-166,0 (157,0-169,0)	100	150,0-170,0 (146,0-174,0)	-	-
1150	118,0-121,0 (115,0-124,0) **		LDA 500	0 bar 127,0-129,0 (124,0-132,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

** Adjusted at the inner lever of the reduced-delivery stop

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

G8

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 12 P..LS3819-14 +RQV..PA 493-5	0,60	0 0,38 0,32	11,1-11,2 10,0-10,2 10,8-10,9 10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MWM 28,8 a
1. Edition
En

PE 8 P 120 A 520/5 RS 7109 RQV 300-1150 PA 756
Komb.-Nr. 0 402 648 814
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067
1-2 - 3- 4 - 7 - 8 - 5 - 6
0-30-90-120-225-255-315-345 ° ± 0,5 ° (± 0,75 °)
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes
company MWM
engine TBD 234 V 16

A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3 (5,15-5,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	19,1-19,3 (18,8-19,6)	0,5 (0,9)			
300	5,9-6,1	2,2-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 11	100	min. 7,4	300	1,3-1,4
							300	5,9-6,1	325	1,6-2,0
ca. 66	11,0	1190-1200							390	2,4-2,8
	4,0	1275-1305				310-530			470	3,0-3,5
	1400	0 - 1,0							1190	8,5
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
		1190-1200*			100	200,0-240,0	-	-

The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. The pumps operate in tandem.
Komb.-Nr. 0402 618 800

Checking values in brackets

* 1 mm less control rod travel than col 2

10.85

BOSCH
Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution / difference mm (1)
PE 8 P.. RS 7109 + RQV .. PA 756	0,7	0 0,10	12,0-12,1 10,0-10,1 10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 14,7 b

1. Edition

En

PE 8 P 120 A 320 LS 7801 RQV 300-1050 PA 797
Komb.-Nr. 0 402 648 824

supersedes-
company Daimler-Benz
engine OM 442 LA
320 kW

1-8-7-2-6-3-5-4 je 45° ± 0,50° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testomat ISO 413

A. Fuel Injection Pump Settings

Port closing at prestroke 5,2-5,3 (5,15-5,35) mm (from BDC) cyl.8; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,8+0,2	21,6-21,8	0,5(0,9)			
300	6,2-6,6	1,6-2,2	0,6(1,0)			
1050	-					
850	-	C, Sp. 4 u. 5	0,8 (1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1090	16,5-18,0	-	-	-	ca. 19	100	min. 7,9	300	1,2-1,4
							300	6,2-6,4	600	4,9-5,1
ca. 54	14,5	1095-1110							1075	7,4-7,6
	4,0	1160-1190							1100	8,0-8,2
	1300	0 - 1,5				300-500 (3a)			1150	9,1

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,68 bar	1095-1110*	LDA	1,15 bar	100	200,0-220,0	1050	15,5+0,2
600	216,0-218,0		850	247,0-251,0		(196,0-224,0)	850	15,9+0,2
	(213,0-221,0)			(244,0-254,0)				
LDA	1,15 bar		LDA	0 bar				
1050	234,0-237,0		500	145,0-147,0				
	(231,0-240,0)			(142,0-150,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

2.86

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
PE 8 P .. LS 780 + RQV.. PA 797	0,68		14,8-15,0
		0,31	12,2-12,4
		0,47	13,8-14,0
		0,82	15,0-15,1
		0,95	15,4-15,6
		1,10	16,0-16,1
		0,15	11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 14,7 b 1

1. Edition

En

PE 8 P 120 A 320 LS 7801 RQV 300-1050 PA 797-1

1-8-7-2-6-3-5-4 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes-
company: Daimler-Benz
engine: OM 442 A
260 kW

Komb.-Nr. 0 402 648 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 5,20-5,30 (5,15-5,35) mm (from BDC) Cyl.8: RW = 20,0-21,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,6+0,2	19,2-19,4	0,5(0,9)			
300	6,2-6,6	1,6-2,2	0,6(1,0)			
1050	-					
700	-	C, Sp. 4 u. 5	0,8(1,2)			
850	-					
500	-					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1090	15,2-17,8	-	-	-	ca. 19	100	min.7,7	300	1,2-1,4
							300	6,2-6,4	600	4,9-5,1
ca. 53	11,6	1095-1110							1075	7,4-7,6
	4,0	1155-1185				300-450			1100	8,0-8,2
	1300	0-1,5							1150	9,1
						(3a)				

Torque control travel a = 1,20 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,65 bar	1095-1110*	LDA	1,05 bar	100	175,0-190,0	1050	12,6+0,2
600	192,0-194,0		700	205,0-209,0		(171,0-194,0)	850	13,5+0,2
	(189,0-197,0)			(202,0-212,0)			700	14,1+0,3
LDA	1,05 bar		850	201,0-205,0				
1050	179,0-182,0			(198,0-208,0)				
	(176,0-185,0)		LDA	0 bar				
			500	145,0-147,0				
				(142,0-150,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH (Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung)

2.86

G14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 8 P..LS 7801 +RQV..PA 797-1	0,65	0,30 0,40 0,85	13,6-13,6 11,9-12,1 12,9-13,2 13,7-13,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test specifications Fuel injection pumps and governors

PE 6 ZW 160/120 RS 1028/11 RQUV 300-900 ZWA 51 R

Komb.-Nr. 0 402 436 058

Replaces 9.85

Firm: MTU

Engine: 396

1- 2- 3 - 4 - 5 - 6

0-45-120-165-240-285 ° ± 0,5 ° (± 0,75 °)

Note VDT-W-Allg./7

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) Cyl. 6

Rotational speed min ⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min ⁻¹ 2	Control-rod travel mm 3	Control lever flection degrees 4	min ⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min ⁻¹ 8	Control-rod travel mm 9	min ⁻¹ 10	Control-rod travel mm 11
ca. 79	900	18,0-19,0	ca. 27	375	8,0	ca. 2	300	8,0	-	-
	700	18,0-19,0	(max. 30)							
ca. 79	17,0	905-925		200	14,3-17,2		200	10,8-14,2		
	4,0	1000-1050		300	10,3-11,8		400	3,9-5,0		
	1100	0 - 2,0		500	2,5-3,7		485-590 = 0			
				590-720 = 0						

Torque control travel a = - mm Speed regulation: At 1 mm less control rod travel

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min ⁻¹ 1	cm³/1000 strokes 2	min ⁻¹ 3 Idle stop	min ⁻¹ 4	cm³/1000 strokes 5	min ⁻¹ 6	cm³/1000 strokes 7
-	not known !	300 RW = 8,0 mm	-	-	-	-

Checking values in brackets

11 85

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 3,6 n 1
2. Edition
En

VE 6/11 F 1800 L 18 Overflow temperature 45° C

supersedes 3.83
company: Volvo
engine:

0 460 416 001

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Tesoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ±0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,2-3,6	mm	0,74	
1.2 Supply-pump pressure	1500	6,0-6,7	bar (kgf/cm²)	0,74	
1.3 Full-load delivery with charge-air pressure	500	47,0-49,0	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	63,5-64,5	cm³/1000 strokes	0,74	3,0
1.4 Idle regulation	325	8,0-12,0	cm³/1000 strokes	0	2,0
1.5 Full-speed regulation	100	min. 72,0	cm³/1000 strokes	0	
1.6 Start	2040	19,5-25,5	cm³/1000 strokes	0,74	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,74 bar	n = rev/min	1000	1500	1800
	mm	0,7-1,7(0,5-1,9)	(2,7-4,1)	4,5-5,3(4,2-5,6)
2.2 Supply pump LDA = 0,74 bar	n = rev/min	400		1800
	bar (kgf/cm²)	2,0-2,7		6,9-7,6
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2140-2220	0		0,74
	2120	max. 6,0		0,74
	2040		(18,0-27,0)	0,74
	1800	57,2-59,8	(55,8-61,2)	0,74
	1500		(61,3-66,7)	0,74
	* 500	51,5-53,5	(49,1-55,9)	0,28
	500		(44,6-51,4)	0
switch-off	1800	0		
Idle stop	370-450	0		
	325		(5,5-14,5)	

2.4 Solenoid — cut-in voltage min. 10 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,9-6,2
MS	1,5-1,7
SVS	max.4,2
A	5,8-10,8
B	10,4-15,6

Observations

* LDA-stroke 4,0 mm
Use adjusting nut (46) to correct.

BOSCH

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 x

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 1800 R 160-1

0 460 494 150

Overflow temperature 45° C

supersedes -
company: VW
engine: 068.5 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,2-3,6	mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	41,5-42,5	cm³/1000 strokes	0,75	2,5
Full-load delivery without charge-air pressure	600	24,5-25,5	cm³/1000 strokes	0	
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes	0	2,0
1.5 Full-speed regulation	1870	9,0-15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min.35,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min	1000	1500	1780
	mm	1,2-2,0 (0,9-2,3)	(2,7-4,1)	4,1-4,9 (3,8-5,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min	600		1780
	bar (kgf/cm²)	3,4-4,0		6,2-6,8
Overflow delivery	n = rev/min	600 (0 bar)		1780 (0,75 bar)
	cm³/10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1900	max. 4,0		0,75
	1870		(8,0-16,0)	0,75
	1780	39,5-41,5	(38,3-42,7)	0,75
	1500		(39,8-44,2)	0,75
	1000*	33,5-34,5	(31,8-36,2)	0,30
	600		(22,8-27,2)	0
switch-off elektr.	400	0		
Idle stop	600	max.3,0		
	475		(4,0-12,0)	
End stop	350	min.32,0		
	450	max.38,0		

2.4 Solenoid — cut-in voltage: min.10,0 Volt, rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	5,7
A	
B	

Observations

* LDA-stroke 4,5 mm
Use adjusting nut (46) to correct.

G-18

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 4/9 F 1500 R 160-2 Overflow temperature 45° C

0 460 494 151

supersedes -
company: VW
engine: 068.5 T
Ind. Mot. 50 Hz

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-atroke setting - mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1480	3,1-3,5	mm	0,75	
1.2 Supply-pump pressure	1480	5,4-6,0	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1480	41,5-42,5	cm³/1000 strokes	0,75	2,5
Full-load delivery without charge-air pressure	600	24,5-25,5	cm³/1000 strokes	0	
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes	0	2,0
1.5 Full-speed regulation	1570	9,0-15,0	cm³/1000 strokes	0,75	
1.6 Start	100	min.35,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1480
LDA=0,75 bar	mm	1,2-2,0 (0,9-2,3)	(2,6-4,0)
2.2 Supply pump	n = rev/min	600	
LDA= 0,75 bar	bar (kgf/cm²)	3,4-4,0	
Overflow delivery	n = rev/min	600 (0 bar)	1480 (0,75 bar)
	cm³/10 s	55-138 (40-153)	55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1600	max. 4,0		0,75
	1570		(8,0-16,0)	0,75
	1480		(39,8-44,2)	0,75
	1000*	30,5-34,5	(31,8-36,2)	0,30
	600		(22,0-28,0)	0
switch-off electr.	400	0		
Idle stop	600	max.3,0		
	475		(4,0-12,0)	
End stop	350	min.32,0		
	450	max.38,0		

2.4 Solenoid — cut-in voltage min.10,0 Volt, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	5,7
A	
B	

Observations

* LDA-stroke 4,5 mm
Use adjusting nut (46) to correct.

BOSCH

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6 m
2. Edition
En

Testoil-ISO 4113

VE 6/12 F 1400 R 199-1
0 460 426 062

supersedes 10.85
company MAN
engine D 0226 MLE
154 kW/2800 min^{-1}
Overflow temperature 45° C MAN-Nr. 2-7643

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	3,1 - 3,5	mm		
1.2 Supply pump pressure	800	5,2 - 5,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	-		cm³/1000 strokes		
Full-load delivery with charge-air pressure	1000	132,5-133,5	cm³/1000 strokes		4,0
1.4 Idle speed regulation	300	15,0 - 21,0	cm³/1000 strokes		3,5
1.5 Start	1480	92,0 -100,0	cm³/1000 strokes		
1.6 Full-load speed regulation	100	min. 90,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	800	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1100	1400
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	4,1-4,9(3,8-5,2)	4,5-5,3(4,2-5,6)
2.2 Supply pump	n = rev/min	200		1400	
	bar (kgf/cm²)	2,3 - 2,9		7,3 - 7,9	
Overflow delivery	n = rev/min	400			
	cm³/10 s	42-83 (27-98)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1650	max. 2,0	
	1600	6,0-14,0 (5,0-15,0)	
	1480	(91,0-101,0)	
	1400	123,5-126,5 (122,0-128,0)	
	1000	(130,0-136,0)	
	630	130,0-134,0 (128,2-135,8)	
switch-off			
Idle stop	300	(13,0-23,0)	
	350	1,0-7,0	
	400	max. 2,0	
End stop	380	min. 120,0	
	430	max. 135,0	

2.4 Solenoid — cut-in voltage / test voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7-5,9
MS	1,0-1,2
SVS	2,0
A	
B	

Observations

BOSCH

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 S1

1. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 L 216
0 460 406 049

Overflow temperature 45° C

supersedes -
company: VW
engine: 087 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/.

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,4-1,8	mm	0,8	
1.2 Supply-pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	45,5-46,5	cm³/1000 strokes	0,8	max. 2,5
Full-load delivery without charge-air pressure	600	24,0-25,0	cm³/1000 strokes	0	
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2675	13,0-19,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 40,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min	1500	2000	2400
	mm	(0,9-2,3)	2,7-3,5(2,4-3,8)	4,1-4,9(3,8-5,2)
2.2 Supply pump LDA = 0,8 bar	n = rev/min	600		2400
	bar (kgf/cm²)	3,3-3,9		7,9-8,5
Overflow delivery	n = rev/min	600 (0 bar)		2400 (0,8 bar)
	cm³/10 s	41-83(26-98)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2850	max. 6,0		
	2675		(12,0-20,0)	0,8
	2575	25,0-35,0	(26,0-34,0)	0,8
	2400	37,5-39,5	(36,3-40,7)	0,8
	1500		(43,8-48,2)	0,8
	800 *	32,0-33,0	(30,3-34,7)	0,25
	600	37,0-40,0	(35,5-41,5)	0,8
	600		(22,3-26,7)	0
switch-off electr.	400	0		
Idle stop	750	max. 4,0		
	415		(4,0-12,0)	
End stop	230	min.40,0		
	380	max.30,0		
2.4 Solenoid	cut-in voltage	min. 10 Volt rated voltage 12 V.		

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	
A	
B	

Observations

* LDA-stroke 5,7 mm
Use adjusting nut (46) to correct.

G21

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4 s

1. Edition

En

Testoil-ISO 4113

VE 6/10 F 2400 L 216-2 Overflow temperature 45° C
0 460 406 053

supersedes -
company: VW
engine: 087 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,4-1,8	mm	0,8	
1.2 Supply-pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	45,5-46,5	cm³/1000 strokes	0,8	max. 2,5
Full-load delivery without charge-air pressure	600	24,0-25,0	cm³/1000 strokes	0	max. 2,0
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2675	13,0-19,0	cm³/1000 strokes	0,8	
1.6 Start	100	min.40,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min	1500	2000 2400
	mm	(0,9-2,3)	2,7-3,5(2,4-3,8) 4,1-4,9(3,8-5,2)
2.2 Supply pump LDA = 0,8 bar	n = rev/min	600	2400
	bar (kgf/cm²)	3,3-3,9	7,9-8,5
Overflow delivery	n = rev/min	600 (0 bar)	2400 (0,8 bar)
	cm³/10 s	41-83(26-98)	55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2850	max.6,0	0,8
	2675	(12,0-20,0)	0,8
	2575	25,0-35,0(26,0-34,0)	0,8
	2400	37,5-39,5(36,3-40,7)	0,8
	1500	(43,8-48,2)	0,8
	800 *	32,0-33,0(30,3-34,7)	0,25
	600	37,0-40,0(35,5-41,5)	0,8
	600	(22,3-26,7)	0
switch-off electr.	400	0	
Idle stop	750	max. 4,0	
End stop	415	(4,0-12,0)	
	230	min.40,0	
	380	max.30,0	

2.4 Solenoid — cut-in voltage min. 10 Volt
rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,4-1,6
SVS	
A	
B	

Observations

* LDA-stroke 5,7 mm
Use adjusting nut (46) to correct.

G22

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 17

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2400 R 221
0 460 494 179

supersedes -
company VW
engine 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Fre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	2,1 - 2,5	mm		
1.2 Supply pump pressure	1250	4,0 - 4,6	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	-		cm³/1000 strokes		
Full-load delivery with charge-air pressure	1500	31,5 -32,5	cm³/1000 strokes		2,5(3,0)
1.4 Idle speed regulation *	A 800	3,0 - 4,0	cm³/1000 strokes		
1.5 Start	2600	11,0-17,0	cm³/1000 strokes		
1.6 Full-load speed regulation	100	min. 35,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	1250				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1250	1800	2400
	mm	1,0-1,8(0,7-2,1)	(1,6-3,0)	4,1-4,9(3,8-5,2)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600			2400
	bar (kgf/cm²)	2,1-2,7			7,3-7,9
Overflow delivery	n = rev/min	600			2400
	cm³/10 s	41-83(26-98)			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max. 4,0		
	2600		(10,0-18,0)	
	2500	20,0-30,0	(21,0-29,0)	
	2400	26,8-28,8	(25,6-30,0)	
	1500		(29,8-34,2)	
	600	20,2-23,2	(18,7-24,7)	
switch-off electr.	400	0		
Idle stop	A 550	max. 4,5		
	B 375	12,0-14,0(9,0-17,0)		
	B 425	5,5- 8,5(3,0-11,0)		
	C 525	7,0- 9,0		
End stop	200	min. 35,0		
	350	max. 30,0		

2.4 Solenoid — cut-in voltage min. 10Volt; test voltage rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	
A	
B	

Observations

* Setting of the residual fuel delivery.

Setting of the idle speed (LFG) according to VDT-I-460/135

G23

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 16

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2250 R 223
0 460 494 182

supersedes
company VW
engine 086 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	2,9-3,3	mm	0,75	
1.2 Supply pump pressure	1250	4,2-4,8	bar (kgf/cm²)	0,75	
1.3 Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	2,5(3,0)
Full-load delivery with charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
1.4 Idle speed regulation *	A 800	2,5-3,5	cm³/1000 strokes	0	
1.5 Start	2525	13,0-19,0	cm³/1000 strokes	0,75	
1.6 Full-load speed regulation	100	min. 35	cm³/1000 strokes	0	
1.7 Load-dependent start of delivery	1250			0	

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,75 bar	n = rev/min	1000	1250	1800	2250
	mm	1,8-2,6(1,5-2,9)	(2,4-3,8)	4,7-5,5(4,4-5,8)	6,1-6,9(5,8-7,2)
2.2 Supply pump LDA = 0,75 bar	n = rev/min	600		2250	
	bar (kgf/cm²)	2,3-2,9		7,0-7,6	
Overflow delivery	n = rev/min	600 (0 bar)		2250 (0,75 bar)	
	cm³/10 s	41-83(26-98)		55-138(40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	max. 4,0		0,75
	2525		(12,0-20,0)	0,75
	2425	25,5-35,5	(26,5-34,5)	0,75
	2250	38,0-40,0	(36,8-41,2)	0,75
	1500		(41,8-46,2)	0,75
	1000 **	33,5-34,5	(31,8-36,2)	0,30
	600	32,0-35,0	(30,5-36,5)	0,75
	600		(21,8-26,2)	0
switch-off				
Idle stop	B 375	12,0-14,0(9,0-17,0)		
	B 425	5,5-8,5 (3,0-11,0)		
	C 525	7,0-9,0		
End stop	250	max.40,0		

2.4 Solenoid — cut-in voltage min. 10 Volt; test voltage rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	
A	
B	

Observations

* Setting of the residual fuel delivery.

Setting of the idle speed (LFG) according to VDT-I-460/135

** LDA-stroke 6,8 mm

G24

BOSCH

Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 15

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2400 R 224
0 460 494 185

supersedes
company: VW
engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1250	2,1-2,5	mm		
1.2 Supply pump pressure	1250	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	-		cm³/1000 strokes		
Full-load delivery with charge-air pressure	1500	31,5-32,5	cm³/1000 strokes		2,5(3,0)
1.4 Idle speed regulation *	A 800	3,0-4,0	cm³/1000 strokes		
1.5 Start	2600	11,0-17,0	cm³/1000 strokes		
1.6 Full-load speed regulation	100	min. 35,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	1250				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1250	1800	2400
	mm	1,0-1,8(0,7-2,1)	(1,6-3,0)	4,1-4,9(3,8-5,2)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600			2400
	bar (kgf/cm²)	2,1-2,7			7,3-7,9
Overflow delivery	n = rev/min	600			2400
	cm³/10 s	41-83(26-98)			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2800	max. 4,0	
	2600	(10,0-18,0)	
	2500	20,0-30,0 (21,0-29,0)	
	2400	26,8-28,8 (25,6-30,0)	
	1500	(29,8-34,2)	
	600	20,2-23,2 (18,7-24,7)	
switch-off electr.	400	0	
Idle stop	A 550	max. 4,5	
	B 375	12,0-14,0 (9,0-17,0)	
	B 425	5,5-8,5 (3,0-11,0)	
	C 525	7,0-9,0	
End stop	200	min.35,0	
	350	max.30,0	

2.4 Solenoid
max. cut-in voltage
test voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,2
A	
B	

Observations

* Setting of the residual fuel delivery.

Setting of the idle speed (LFG) according to VDT-I-460/135

H1

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MWM 5,9 a 3

1. Edition

En

PES 6 A 80 D 320 RS 1271
Komb.-Nr. 9 400 085 261

RSV 350-1250 A0B 2029-3

supersedes
company MWM
engine D 229-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	8,2-8,3	5,0-5,1	0,25(0,4)			
350	5,9-6,1	0,7-1,0	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	350	5,5	1250	8,2-8,3
	x = 3,0						100	min.19,0	500	9,8-9,9
ca. 50 (2a)	7,2	1290-1300					350	5,9-6,1	800	9,1-9,4
	4,0	1320-1350					490-550	= 2,0		
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	49,5-50,5 (48,0-52,0)	1290-1300*	500	50,5-52,5 (48,5-54,5)	100	19,0-21,0 mm RW	350	6,0
			800	51,0-53,0 (49,0-55,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FIA 2,6 d 1

1. Edition

En

PES 3 A 90 D 410 RS 2317 EP/RSV 325-1100 A 1 B 1015 L supersedes-
Komb.-Nr. 9 400 093 204 company Fiat
engine -

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	8,5-8,6	6,0-6,1	0,3 (0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 61	1100 1140 1190	16,0 11,5 5,5	without auxiliary spring	ca. 24	325	6,0-6,5	500	0
							4,0	1,3-1,7
					100	19,0-21,0		
					325	6,3-6,7		
					400	2,5-4,8		
	1170	7,0-9,0			450	1,0-3,0		
	1190	3,6-6,2			520	0,3-1,0		
(2a)	1230	1,4-2,8	with auxiliary spring					
	1280	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5), idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1080	60,0-61,0 (58,0-63,0)	1120-1130*	-	-	100	min.140,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FIA 2,6 d 2
1. Edition
En

PES 3 A 90 D 410 RS 2317 EP/RSV 325-1200 A 1 B 2037 L
Komb.-Nr. 9 400 093 211
1-3-2 je 120° ± 0,5° (± 0,75°)

supersedes –
company Fiat
engine –

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	9,6-9,7	7,4-7,5	0,3 (0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 63	1200 16,0 1250 10,2 1290 6,0		without auxiliary spring			ca. 22	325	6,0-6,5	–	–
							100	19,0-21,0
							325	6,3-6,7
	1230 7,9-9,5 1280 2,0-3,8						400	1,4-3,2
(2a)	1300 1,0-2,0 1320 0,3-1,0		with auxiliary spring				450 550	0,3-1,0 0,3-1,0

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1180	74,0-75,0 (72,0-77,0)	1210-1220*	–	–	100	min.138,0	–	–

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FIA 2,6 d 3

1. Edition

En

PES 3 A 90 D 410 RS 2317 EP/RSV 325-1200 A 1 B 2068 DL supersedes -
Komb.-Nr. 9 400 093 212 company Fiat
1-3-2 je 120° ± 0,5° (± 0,75°) engine 34/1001
54 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1180	9,8-9,9	7,5-7,6	0,3 (0,5)			
325	6,9-7,1	0,8-1,3	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	325	6,0	1180	9,8-9,9
	x	=					100	19,0	800	9,9-10,2
ca. 64	8,8	1240-1250					325	6,4-6,6	500	10,6-10,7
(2a)	4,0	1270-1300					490-550	= 2,0		
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1180	74,5-75,5 (72,5-77,5)	1240-1250*	800	69,0-71,0 (66,5-73,5)	100	138,0-178,0 = 19,0-21,0 mm RW	0 - 0	-
			500	67,0-69,0 (64,5-71,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FiA 3,5 e
1. Edition
En

PES 4 A 90 D 410 RS 2318 EP/RSV 325-1200 A 2 B 2037 L
Komb.-Nr. 9 400 093 214

supersedes –
company Fiat
engine 44/1009
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2.25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	10,0+0.1	7,7-7,8	0,3(0,5)			
325	6,9-7,1	0,8-1,3	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 28	325	5,5	500	10,0-10.2
	X =						100	min. 19,0	375	11.3-11,8
ca. 58	9,0	1240-1250					325	5,9-6.1		
(2a)	4,0	1300-1330					480-540	=2,0		
	1450	0.3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1180	76.5-77.5 (74.5-79,5)	1240-1250*	-	-	100	148.0-183,0 =19,0-21,0 min RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

PES 6 A 90 D 410 RS 2361 RSV 325-1100 A 1 B 1015 L
Komb.-Nr. 9 400 093 200

supersedes -
company Fiat-Allis
engine -

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	9,6-9,7	7,2-7,3	0,3(0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 67	1100	16,0	without auxiliary spring			ca. 26	325	5,5-6,0	1080	0
	1160	11,9					100	19,0-21,0	500	0
	1220	6,0					325	5,8-6,2	400	1,3-1,7
	1200	7,0-9,0					400	2,0-4,0		
(2a)	1240	3,6-5,5					450	1,0-3,2		
	1270	1,2-3,6	with auxiliary spring				530	0,3-1,0		
	1380	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1080	71,5-72,5 (69,5-74,5)	1120-1130*	-	-	100	min. 140,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FAL 7,4 a 2

1. Edition

En

PES 6 A 90 D 410 RS 2361
Komb.-Nr. 9 400 093 201

EP/RSV 325-1150 A 1 B 1015 L

supersedes
company Fiat-Allis
engine -

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,7+0,1	8,6-8,7	0,3 (0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 66	1150	16,0				ca. 25	325	5,5-6,0	1130	0
	1210	10,4	without auxiliary spring						500	0
	1250	5,7					100	19,0-21,0	400	1,3-1,7
	1220	7,8-11,0					325	5,8-6,2		
	1250	4,0-7,3					400	2,2-4,6		
(2a)	1300	0,8-3,0	with auxiliary spring				450	1,0-3,0		
	1400	0,3-1,0					550	0,3-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limital	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1130	85,5-86,5 (83,5-88,5)	1170-1180*	-	-	100	min.140,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FAL 7,4 a 3

1. Edition

PES 6 A 90 D 410 RS 2361 Z En EP/RSV 325-1150 A 1 B 1015 L supersedes

Komb.-Nr. 9 400 093 202 company Fiat-Allis

engine -

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1130	10,1+0,1	7,9-8,0	0,3 (0,5)			
200	8,9-9,1	3,0-4,0	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 66	1150	16,0				ca. 25	325	5,5-6,0	1130	0
	1210	10,4	without auxiliary spring						500	0
	1250	5,7					100	19,0-21,0	400	1,3-1,7
	1220	7,8-11,0					325	5,8-6,2		
(2a)	1250	4,0-7,3					400	1,8-4,4		
	1300	0,3-3,0	with auxiliary spring				480	0,3-2,4		
	~~1400~~	~~0,3-1,0~~					500	0,3-1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1130	78,5-79,5 (76,5-81,5)	1170-1180*	-	-	100	min.140,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6,1 b 2

2. Edition

En

PES 6 A 85 D 410/3 RS 2366 EP/RS 325/1325 A0B 709 DL
A0C 709 DL

supersedes 4.85
company KHD
engine BF 6 L 913
88 kW/2650 min^{-1} (1)
118 kW/2650 min^{-1} (2)

Komb.-Nr. 0 400 866 063

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1325	11,4+0,1	7,6-7,7	0,3(0,45)			
200	8,9-9,1	1,6-2,2	0,3(0,05)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	VH ca.66	325	6,0	850	11,9-12,1
	X = 7,0					FH ca.30	400	2,7-3,7	500	11,9-12,1
							800	2,7-2,9		
VH ca.66	10,4	1355-1365					1300	2,0-2,2		
FH max.	4,0	1450-1480					1400	0-1,0		
(2a)	1630	0-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/100 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1325 (1)	0,5 bar 76,0-77,0 (74,0-79,0)	1355-1365*	LDA 500	0 bar 44,0-47,0 (42,0-49,0)	100	118,5-128,5 =18,0-18,4 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	VHca.60	325	8,3	1325	11,7-11,8
		x =				FHca.35	550	3,5-4,0	800	12,8-13,1
									600	13,1-13,4
VHca.60	9,5	1370-1380								
FH max.	4,0	1460-1490								
(2a)	1600	0,3-0,7								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat Note: changed to ...)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2)		1370-1380*	LDA	0,6 bar	100	12,0-13,0 mm RW	-	-
LDA	0,6 bar		800	82,0-85,0				
1325	80,0 - 82,0			(80,0-88,0)				
	(78,0-84,0)		LDA	0 bar				
			500	61,5-64,5				
				(59,5-66,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
PES6A..RS2366	(1)		
+EP/RS..A0B 709DL	0,50		11,4-11,5
A0C 709DL		0,38	11,1-11,2
		0,10	9,4- 9,8
	(2)		
	0,42		12,8-12,9
		0,27	12,1-12,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

H11

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 6,1 b 3

1. Edition

En

PES 6 A 85 D 410 RS 2366 EP/RS 325/1325 AOB 2057 DL
Komb.-Nr. 9 400 093 215

supersedes -
company KHD
engine -

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1.9-2,0 (1.85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1325	11,4+0,1	7,6-7,7	0,3(0,5)			
200	8,9-9,1	1.6-2,2	0,25(0.45			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
VHca.70	1325	16,0	without auxiliary spring	VHca.70 FH	325	8,3	1325	11,4-11,5
	1400	12,5			400	6,0-6,8	1100	11,9-12,1
	1500	6,9			600	3,5-4,0	550	12,6-12,8
VHca.70 FH-max. (2a)	1325	15,7-16,3			1000	3,2-3,7		
	1340	15,2-15,8	with auxiliary spring		1300	2,2-2,8		
	1550	2,8-4,8			1400	0		
	1630	0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1325	0.5 bar 76,0-77,0 (74.0-79,0)	1355-1365*	LDA 500	0 bar 44,0-47,0 (42,0-49,0)	100	18,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 2366 +EP/RS..A0B 2057	0.50 UL	0.37 0.09	11.4-11.5 11.1-11.2 9.4-9.8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6,1 a 4

1. Edition

En

PES 6 A 85 D 410 RS 2415
Komb.-Nr. 9 400 093 227

RSV 325-1150 A1B 1111 L

supersedes -
company Deutz Argentinien
engine BF 6 L 913

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	7,3-7,4	0,3 (0,5)			
325	7,9-8,1	0,9-1,3	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 5,0	-	-	-	ca. 27	325	7,5	1150	11,3-11,4
							100	min.19,0	500	12,0-12,1
							325	7,9-8,1	800	12,2-12,5
ca. 60	10,3	1190-1200					540-610	= 2,0		
(2a)	4,0	1220-1250								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1150	72,5-73,5 (70,5-75,5)	1190-1200*	500	78,5-80,5 (76,0-83,0)	100	19,0-21,0 mm RW	-	-
			800	75,5-77,5 (73,0-80,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 9,6 s

2. Edition

En

PES 6 A 95 D 410 RS 2416 RQ 300-1250 AB 1211 L

Komb.-Nr. 0 400 846 544

supersedes 9.85
company: KHD
engine BF 6 L 413 FR
123 kW/2500 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,0+0,1	9,9-10,1	0,35(0,6)			
300	6,4-6,6	1,9-2,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1280	15,2-17,8	-	-	-	ca.18	100	min.8,0	250	1,0-1,2
							300	6,4-6,6	500	3,2-3,5
ca. 50	9,0	1290-1300							1000	6,2-6,4
	4,5	1350-1380				370-485			1250	8,3
	1500	0 - 1,0								
						(3a)				

Torque control travel a = 0,30 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	99,0-101,0 (97,0-103,0)	1290-1300 *	600	91,5-94,5 (89,0-97,0)	100	120,0-130,0 (117,0-133,0) = 14,2-14,6 mm RW	1250	10,0+0,1
							600	10,2+0,1
							715	10,1+0,2
							765	10,0+0,3
					300	19,0-25,0 (16,5-27,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

H15

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 OMB 4,4 e
3. Edition
En

PES 4 A 90 D 410 RS 2442 RQV 325-1050 AB 922 L

Komb.-Nr. 0 400 844 066

supersedes 4.85
company: OMB
engine: CO 3..

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,1 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 68	1060 1120 1220 1310	15,0-18,0 9,7-14,4 0-7 0	-	-	-	ca. 18	150 250 380 670	9,6-11,7 7,4-10,0 2,0- 5,0 0	1060	8,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1050	83,5-84,5 (81,5-86,5	1090-1100*	-	-	100	15,0-15,6 mm RW	-	-
					Change-over point 200-270 U/min			

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 OMB 1,6 c
2. Edition
En

PES 4 A 90 D 410 RS 2518 RQV 300-1400 AB 1018 L
Komb.-Nr. 0 400 844 072

supersedes 3.85
company OM-Brescia
engine 8340.04.300
74 kW

Test-ID 4475

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,8+0,1	7,0 - 7,1	0,3(0,45			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1410	15,0-18,3	-	-	-	ca. 12	100	min. 7,9	250	0-1,0
ca. 66	9,8	1440-1450					300	6,3-6,5	630	2,3-3,1
	4,0	1500-1530					600-760	=2,0	1020	4,5-4,9
	1650	0-1,0				(3a)	950	max. 1,0	1400	8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	69,5-70,5 (67,5-72,5)	1440-1450*	-	-	100	16,2-16,6	-	-
						mm RW		
					300	9,0-15,0 (7,0-17,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 4,1 f

1. Edition

PES 4 A 80 D 410 RS 2523 RS 325/1400 A0B 2212 L En

Komb.-Nr. 9 400 085 256

supersedes –
company Deutz Argentinien
engine F 4 L 913

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1400	12,0+0,1	6,9-7,0	0,25 (0,4)			
325	8,4-8,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	FH ca.28	325	8,5	1400	12,0-12,1
	X = 2,0						280	8,8-9,6	500	12,8-12,9
							420	5,6-6,4	1100	12,3-12,6
VHca.55	11,0	1440-1450					500	max. 4,4		
FHmax.	4,0	1500-1530					1300	max. 3,8		
(2a)	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1400	69,0-71,0 (67,5-71,5)	1440-1450*	500	63,0-65,0 (60,5-66,5)	100	19,0-21,0 mm RW	-	-
			1100	66,0-68,0 (64,0-70,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 DAF 8,3 K 8

1. Edition

PE 6 A 95 D 410 RS 2525 RSV 250-1200 A 5 C 2199 L En -
Komb.-Nr. 0 400 676 176

supersedes
company DAF
engine DHTD 825

Test-ID 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC); RW = 9,0-12 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,9-11,0	0,35(0,6)			
250	6,0-6,2	0,8-1,2	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca 21	250	5,6	1000	12,6-12,7
	x = 4,25						100	min.19,5	400	12,8-12,9
							250	6,0-6,2	300	13,0-13,5
ca. 55	11,6	1230-1240					490-550	= 2,0		
(2a)	4,0	1325-1355								
	1490	0,3 - 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1230-1240 *	LDA	0 bar	100	125,0-135,0 -	-	-
1000	109,0-110,0		600	85,5-86,5		(122,0-138,0)		
	(107,0-112,0)			(83,5-88,5)		= 19,5-		
						21,0 mm RW		
					250	8,0-12,0		
						(5,5-14,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6 A..RS 2525 + RSV..A5C 2199 L	0,70	0,30 0,26 0	12,6-12,7 12,3-12,4 11,9-12,1 11,6-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 5.1e1
1. Edition

En

PES 5 A 80 D 410 RS 2526 EP/RS 325/1400 A0B 699 DL
Komb.-Nr. 9 400 093 230
1-3-5-4-2 je 72° ± 0,5° (± 0,75°)

supersedes -
company KHD
engine -

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,2-11,3	6,5-6,6	0,25(0,4)			
325	8,4-8,6	1,0-1,3	0.2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	VH ca.60	325	8,3	1400	11,2-11,3
	X =					FH	300	8,4-9,1	700	11,8-12,1
							400	6,0-6,8	500	11,8-12,1
VH ca.60	8,7	1400-1450					550	3,5-4,0		
FH max.	4,0	1500-1530					1350	2,8-3,2		
(2a)	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	64,5-65,5 (63,0-67.0)	1430-1440*	700	58,4-60,4 (56,4-62,4)	100	100,0-140,0	-	-
			500	55.9-57.9 (53.9-59.9)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

BOSCH

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 d 2

1. Edition

En

PES 6 A 80 D 410/3 RS 2527 RSV 325-900 A 1 C 602-2L
Komb.-Nr. 0 400 866 117

supersedes -
compan KHD
engine F 6L 913
65kW/1800 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
880	12,2+0,1	5,1-5,2	0,25(0,4)			
325	9,3-9,5	0,9-1,5	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 23	325	9,4	-	-
	X = 3,25						140	min. 19,5		
ca. 46 (2a)	11,2	920-930					325	9,3-9,5		
	4,0	945-975					365-425	= 2,0 **		
	1110	0,3-1,4								

The numbers denote the sequence of the tests ** Set idle-speed auxiliary spring at 2 mm control-rod travel,

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
880	50,5-51,5 (49,0-53,0)	920-930	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6,1 L

1. Edition

En

PES 6 A 80 D 410 RS 2527 RS 325/1400 A0B 2212 L

Komb.-Nr. 9 400 085 259

supersedes -
company Deutz Argentinien
engine F 6 L 913
142 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1400	12,0+0,1	6,9-7,0	0,25 (0,4)			
325	8,4-8,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0		-	-	-	FH ca.28	325	8,5	1400	12,0-12,1
	X = 2,0						280	8,8-9,6	500	12,8-12,9
							420	5,6-6,4	1100	12,3-12,6
VHca.55	11,0	1440-1450					550	max. 4,4		
FHmax.	4,0	1500-1530					1300	max. 3,8		
(2a)	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery idle (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	69,0-70,0 (67,5-71,5)	1440-1450 *	500	63,0-65,0 (60,5-66,5)	100	19,0-21,0 mm RW	-	-
			1100	66,0-68,0 (64,0-70,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

En

PES 3 A 80 D 410/3 RS 2540 EP/RSV 325-1075 A 1 B 1111 DL

Komb.-Nr. 9 400 093 400

supersedes -
company KHD-Argentinien
engine F 3 L 913 Traktor

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 -2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,0+0.1	6,2-6,3	0,3(0,45)			
325	7,9-8,1	0,4-0,9	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	325	5,5	1050	12,0-12,1
	X =						325	5,9-6,1	800	12,1-12,4
ca. 57	11,0	1115-1125					495 -	555=2,0	500	12,8-12,9
(2a)	4,0	1160-1190					800	max.1,0		
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1050	61,0-63,0 (59,0-65,0)	1115-1125*	800	59,5-62,5 (59,0-63,0)	100	99,5-139,5 =19,0-21,0 mm RW	-	-
			500	64,0-67,0 (63,5-67,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

(1A)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 FOR 5,9 d

6. Edition

En

PES 6 A 90 D 210 RS 2628 RSV 325-1200 A0B 2140 L

Komb.-Nr. 0 400 866 104 A0C 2140 L

supersedes 5.84

company Ford

engine Dover 363 T/C

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

At port closing the locating pin must engage in the slot of the pointer.

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175	11,5+0,1	8,4 - 8,5	0,3(0,45)			
350	5,1-5,3	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 39	350	4,8	1175	11,5+0,1
	X =	4,0							500	11,5+0,2
							100	min. 19,5		
							350	5,2-5,4		
ca. 69	10,5	1240-1250					490-5	50= 2,0		
(5)	4,0	1365-1395					625	max. 1,0		
	1540	0,3 - 1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
LDA	0,7 bar	1240-1250 *	LDA	0 bar	100	76,0 - 90,0	-	-
1175	83,5-84,5		500	49,0 - 51,0		(73,0-93,0)		
	(81,5-86,5)			(47,0 - 53,0)		= 19,5-21,0		
						mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

J1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A .. RS 2628 mit .. AOB 2140 L	0,7	0 0,48 0,30	11,5 - 11,6 10,1 - 10,2 11,1 - 11,2 10,3 - 10,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 4,1 d 3
2. Edition
En

PES 4 A 85 D 410/3 RS 2638 RSV 325-1400 A 8 C 707 L
Komb.-Nr. 0 400 864 060

supersedes 8.85 KHD
company BF 4 L 913
engine 78 kW / 2800 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) ; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,7+0,1	8,3 - 8,4	0,3 (0,45)			
325	8,4-8,6	0,9 - 1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 22	325	8,0	1250	12,7-12,8
	X = 5,25						100	min. 19,5	500	13,6-13,7
ca. 62 (2a)	11,7	1290-1300					325	8,4-8,6	1015	13,1-13,3
	4,0	1390-1420					660 -	720 = 2,0		
	1560	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1290-1300*	LDA	0,7 bar	100	105,0-115,0	-	-
1250	82,5 - 83,5		850	84,5 - 86,5		(102,0-118,0)		
	(80,5 - 85,5)			(82,0 - 89,0)		= 17,1-17,5		
			LDA	0 bar		mm RW		
			500	59,5 - 61,5				
				(57,5 - 63,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 4 A..RS 2638 + RSV..A 8 C 707 L	0,70	0 0,41 0,25	13,5 - 13,6 12,3 - 12,4 13,2 - 13,3 12,8 - 13,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 4,1 d
2. Edition
En

PES 4 A 85 D 410/3 RS 2638 RSV 325-1400 A 8 C 707-3 L
Komb.-Nr. 0 400 864 063

supersedes 8.85
company KHD
engine BF 4 L 913
78 kW/2800 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 250	12,7+0,1	8,3 - 8,4	0,3 (0,45)			
325	8,4-8,6	0,8 - 1,4	0,25 (0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3 - 0,7	-	-	-	ca. 16	325	8,0	1250	12,7-12,8
	x = 4,0						325	8,4-8,6	500	13,7-13,8
ca.54	11,4	1290-1300					610 - 670 = 2,0		850	13,5-13,6
(2a)	4,0	1375-1405							950	13,2-13,4
	1540	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 82,5 - 83,5 (80,5 - 85,5)	1290-1300*	LDA 850	0,7 bar 84,5 - 86,5 (82,0 - 89,0)	100	115,0-125,0 - (112,0-128,0) =18,4-18,8 mm RW	-	-
			LDA 500	0 bar 59,5 - 61,5 (57,5 - 63,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
PES 4 A..RS 2638 +RSV..A8C 707-3L	0,70	0 0,39 0,25	13,7 - 13,8 12,3 - 12,4 13,5 - 13,6 12,8 - 13,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VAU 5,4 a 1

3. Edition

En

PES 6 A 95 D 320 RS 2646 RQV 300-1300 AB 1163-1 R

Komb.-Nr. 0 400 846 533

supersedes 7.85

company: Vauxhall

engine: 330 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
810	9,7-9,8	6,4-6,6	0,35(0,6			
300	5,9-6,1	0,8-1,4	0,35(0,5			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca. 17	100	min.7,4	275	0,9-1,1
							300	5,9-6,1	500	3,1-3,5
ca. 61	8,7	1350-1360							1000	5,7-5,8
	4,0	1455-1485							1300	8,0
	1600	0-1,0				350-490				
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
810	63,5-65,5 (61,5-67,5)	1350-1360*	1200	71,5-74,5 (69,5-76,5)	100	97,0-107,0 (94,0-110,0) = 19,5-21,0 mm RW	-	-
			500	52,0-55,0 (50,0-57,0)	300	8,0-14,0 (5,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MWM 4,1 b
4. Edition
En

PES 4 A 90 D 320/3 RS 2659 RSV 325-1500 A2B 505-2 R
Komb.-Nr. 0 400 864 057

supersedes 7.85
company MWM
engine D 266 B-4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testöl-ISO 4113

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,5+0,1	9,0-9,1	0,3 (0,45)			
325	6,4-6,6	1,1-1,7	0,2 (0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	325	6,0	-	-
	x =	5,5					100	min.19,5		
ca.66 (2a)	9,5	1540-1550					325	6,4-6,6		
	4,0	1590-1620					460-520	= 2,0		
	1780	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1500	89,5-90,5 (87,5-92,5)	1540-1550*	-	-	100	131,0-141,0 - (128,0-144,0) = 19,5-21,0 mm RW		-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J8

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 4,1b1
1. Edition

En

PES 4 A 90 D 320/3 RS 2659 RSV 325-1500 A 2 C 505 - 2 R supersedes -
Komb.-Nr. 0 400 864 057 company MWM
engine D 226 B-4

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	11,2-0,1	9,0-9,1	0,3(0,5)			
325	7,0-7,2	0,8-1,4	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	325	6,6	-	-
	x = 4,75						100	min. 19,5		
							325	7,0-7,2		
ca. 61	9,5	1540-1550					465 - 525	=2,0		
(2a)	4,0	1615-1645								
	1780	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1500	89,5 - 90,5 (87,5 - 92,5)	1540-1550*	-	-	100	131,0-141,0 (128,0-144,0) = 19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 11,4 h

2. Edition

En

PES 6 A 95 D 410 LS 2669
Komb.-Nr. 0 400 846 523

RQ 750 AB 1172 L

supersedes 9.84
company MAN
engine D 2566 ME
114 kW/1500 min^{-1}
MAN-Nr. 2-7365

Test-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC) Cyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	11,8-12,0	0,35(0,6)			
250	5,9-6,1	0,9-1,5	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,0 4,0	750-755 775-785	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp. 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	118,0-120,0 (116,0-122,0)	-	-	-	-	-

Checking values in brackets

2.86

J10

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 8,0 o 1

1. Edition

En

PES 5 A 95 D 410 RS 2680 RQV 300-1150 AB 1217 L

Komb.-Nr. 0 400 845 082

1- 3- 5 - 4 - 2

0-72-144-216-288 ± 0,5° (± 0,75°)

supersedes -

company KHD

engine F 5 L 413 FRW 85,0 kW/2?00 min⁻¹

Tastolio 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,3+0,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 13	100	min.8,0	300	1,3-1,5
							300	6,4-6,6	500	3,4-3,6
ca. 64	7,3	1190-1200							800	5,2-5,6
	4,0	1230-1260				320-415			1150	8,0
	1350	0-1,0				3a				

Torque control travel a = 1,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation 2b intermediate speed 4a: rev/min 3	Fuel delivery characteristics 5a high idle speed 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery 6 Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
1150	72,0-74,0 (70,0-76,0)	1190-1200*	700**	80,5-83,5 (78,0-86,0)	100	120,0-130,0 (117,0-133,0)	1150	8,3+0,1
							500	9,7+0,1
							840	9,3+0,2
			700	98,5-101,5 (96,0-104,0)			1610	8,6+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

** reduced fuel delivery

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 9,6 m 1
1. Edition
En

PES 6 A 95 D 410 RS 2681 RQV 300-1150 AB 1217 L
Komb.-Nr. 0 400 846 545

supersedes–
company: KHD
engine: F 6 L 413 FRW
102,0 kW/2300 min-1

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,3+0,1	7,2-7,4	0,35(0,6)			
300	6,4-6,6	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 13	100 300	min.8,0 6,4-6,6	300 500 800 1150	1,3-1,5 3,4-3,6 5,2-5,6 8,0
ca. 64	7,3 4,0 1350	1190-1200 1230-1260 0-1,0				320-415 (3a)				

Torque control travel a = 1,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b), intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a), high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6), idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	72,0-74,0 (70,0-76,0)	1190-1200*	700**	80,5-83,5 (78,0-86,0)	100	120,0-130,0 (117,0-133,0)	1150 500 840 1010	8,3+0,1 9,7+0,* 9,3+0,2 8,6+0,2
			700	98,5-101,5 (96,0-104,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

** reduced fuel delivery

10.85

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WP 001/4 FOR 6,6a3
1. Edition
En

PES 6 A 95 D 410 RS 2688 KQV 350-1400 AB 1202-1L

Komb.-Nr. 9 400 085 263

supersedes
company Ford (FTO)
engine 6,6 l NA
140 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,15-3,25 (3,20-3,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1+0,1	7,1-7,3	0,35(0,6)			
350	6,4-6,6	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1420	15,2-17,8	-	-	-	ca. 14	100	min.9,0	350	1,3-1,6
ca. 63	9,1	1440-1450					350	6,4-6,6	700	4,2-4,6
	4,0	1540-1570					540- 600	=2,0	1100	6,1-6,4
	1700	0- 1,0							1420	8,6
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	70,5-72,5 (68,5-74,5)	1440-1450*	500	50,5-53,5 (48,0-56,0)	100	112,0-122,0 = 19,0- 21,0 mm RW	-	-
					350	7,0-11,0 (5,0-13,0)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.86

Test Specifications Fuel Injection Pumps ① and Governors

PES 6 A 95 D 410 RS 2688 RQV 375-1300 AB 1208-1L

Komb.-Nr. 9 400 085 262

supersedes

company Ford

engine 6,6 L TC 165 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,15-3,25 (3,10-3,30) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,1+0,1	8,6-8,8	0,35 (0,6)			
375	6,7-6,9	1,0-1,4	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1345	15,2-17,8	-	-	-	ca.16	100	min.10,0	350	1,3-1,6
ca. 63	11,1	1340-1350					375	6,7- 6,9	700	4,1-4,5
	4,0	1450-1480					650-710=2,0		1100	6,3-6,6
	1600	0-1,0							1345	8,6
						(3a)				

Torque control travel a = 0,70mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1300	0,6 bar 86,0-88,0 (84,0-90,0)	1340-1350*	LDA 900	0,6 bar 86,0-89,0 (83,5-91,5)	100	115,0-125,0 =20,0- 21,0 mm RW	1300	12,1+0,1
							600	12,8+0,1
							800	12,6+0,2
							900	12,4+0,3
LDA 600	0,6 bar 83,0-86,0 (80,5-88,5)		LDA 600	0 bar 57,0-59,0 (55,0-61,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

FOR 6,6a2

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 2688 + RQV..AB 1208-1L	0,60	0 0,40 0,25	12,8-12,9 10,6-10,7 12,2-12,3 11,0-11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 3,9a1
1. Edition
En

PES 4 A 90 D 320 RS 2702 RSV 350-1150 A2B 2129-7R
Komb.-Nr. 9 400 085 268

supersedes
company MWM
engine D 229-4

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,65-2,75 (2,60-2,80) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,5-9,6	7,0-7,1	0,3(0,5)			
350	5,9-6,1	1,1-1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	350	5,5	1150	9,5-9,6
	x = 3,75						100	min.19,0	500	10,4-10,5
ca. 46 (2a)	8,5	1190-1200					350	5,9-6,1	800	9,8-10,1
	4,0	1225-1255					590-650	=2,0		
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1150	70,0-71,0 (68,0-73,0)	1190-1200*	500	67,0-69,0 (64,5-71,5)	100	19,0-21,0 mm RW	-	-
			800	69,0-71,0 (66,5-73,5)	350	11,0-15,0 (9,0-17,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 4,1 e 1
1. Edition
En

PES 4 A 85 D 410/3 RS 2707 RQV 300-1250 AB 1089-1 L
Komb.-Nr. 0 400 834 002

supersedes -
company: KHD
engine: BF 4 L 913 T
64 kW/2500 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,0+0,1	7,0-7,1	0,3 (0,45			
300	4,9-5,1	1,0-1,6	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	ca. 10 (3a)	100	min. 6,4	250	0,5-0,7
							300	4,9-5,1	450	3,1-3,3
ca. 66	11,0	1290-1300					355-415	= 2,0	800	4,6-4,7
	4,0	1375-1405							1100	6,6-6,8
	1500	0 - 1,0							1300	8,7

Torque control travel a = 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	69,5-70,5 (67,5-72,5)	1290-1300*	650	58,5-60,5 (56,0-63,0)	100	120,0-130,0 (117,0-133,0) = 19,3-15,7 mm RW	1250	12,0+0,1
							650	12,3+0,1
							915	12,2+0,2
							985	12,0-0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 VAL 2,7 a

1. Edition

En

PES 3 A 95 D 320 RS 2711 RSV 325-1175 AOC 2178-3 R
Komb.-Nr. 0 400 873 037
1-2-3 je 120° ± 0,5° (± 0,75°)

supersedes
company Valmet
engine 309 DS 4
45 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,8+0,1	8,1-8,3	0,35 (0,6)			
325	5,1-5,3	0,9-1,5	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 27	325	4,7	1200	10,8-10,9
	x = 5,25						100	min.19,5	500	11,1-11,2
							325	5,1-5,3	910	10,9-11,1
ca. 49	9,8	1240-1250					440-500	= 2,0		
(2a)	4,0	1335-1365								
	1500	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	80,5-82,5 (78,5-84,5)	1240-1250*	500	64,5-67,5 (62,0-70,0)	100	205,0-215,0 (202,0-218,0) =19,5-21,0 mm RW	-	-
					325	9,0-15,0 (6,5-17,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FOR 6,6 f

1. Edition

En

PES 6 A 95 D 410 RS 2714 RQV 375-1300 A B 1208-1L
Komb.-Nr. 9 400 085 258

supersedes
company Ford
engine 6,6 TC
165 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,15-3,25 (3,0 -3,20) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,1+0,1	8,6-8,8	0,35(0,6)			
375	6,7-6,9	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1345	15,2-17,8	-	-	-	ca. 16	100	min. 10,0	350	13,-1,6
ca. 63	11,1	1340-1350					375	6,7-6,9	700	4,1-4,5
	4,0	1450-1480					600-710	=2,0	1100	6,3-6,6
	1600	0-1,0							1345	8,6
						(3a)				

Torque control travel a = 0,70 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,6 bar	1340-1350*	LDA	0,6 bar	100	115,0-125,0	1300	12,1+0,1
1300	86,0-88,0		900	86,0-89,0		= 20,0- 21,0	600	12,8+0,1
	(84,0-90,0)			(83,5-91,5)		mm RW	800	12,6+0,2
LDA	0,6 bar		LDA	0 bar			900	12,6+0,2
600	83,0-86,0		600	57,0-59,0				
	(80,5-88,5)			(55,0-61,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.86

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES6A..RS2714 +RQV..AB 1208-AL	0,60	0 0,40 0,25	12,8-12,9 10,6-10,7 12,2-12,3 11,0-11,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 m

En 1. Edition

PES 6 A 95 D 410 RS 2715
Komb.-Nr. 0 400 846 548

RQV 300-1250 AB 1158-1 L

supersedes-
company: KHD
engine: BF 6 L 913
140 kW/2500 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	14,0+0,1	9,5-9,7	0,35(0,6)			
300	4,9-5,1	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1265	15,2-17,8	-	-	-	ca. 9	100	min.6,5	300	0,8-0,9
ca. 67	13,0	1290-1300					300	4,9-5,1	600	3,6-3,9
	4,0	1390-1420					360-420	= 2,0	900	5,2-5,4
	1550	0-1,0							1200	7,8-7,9
									1400	10,2
						(3a)				

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 94,5-96,5 (92,5-98,5)	1290-1300*	LDA 500	0 bar 53,0-55,0 (51,0-57,0)	100	115,0-125,0 (112,0-128,0	1250	14,0+0,1
							500	14,0+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.86

J21

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 2715 + RQV..AB 1158-1 L	0,70	0 0,39 0,20	14,0-14,1 10,2-10,3 13,1-13,2 11,4-11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 c

4. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1103
RQV 350-1300 MW 43-1

0 403 446 132
1-5-3-6-2-4 je 60° DHK 1 688 901 016
207 + 3 bar

supersedes 9.83
company: IHC
engine: DT 466 B
143,4 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,10 (3,95-4,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,9+0,1	9,55-9,75	0,35(0,6)			
350	5,7-5,8	1,6-2,0	0,35(0,55)			
1300	10,9+0,1		0,65(0,7)			
500	9,4-9,5					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0 1550	1440-1505 0-1,0				ca.13	100 350	min.9,0 5,7-5,8		
ca.61,5 ± 2,5	4,0	1470-1480				360-700 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)		LDA 1300	0,7 bar 96,5-100,5 (94,5-102,5)	100 350	140-180 16,0-20,0 (13,5-22,5)		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	220-280(210-290) 100(80)		Locking Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1103 mit RQV.. MW 43-1	0,4	0,9 0 0,2	10,5-10,6 10,9-11,0 9,4-9,5 9,8-9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004
RSV 325-1050 MW 4/308-1

0 403 476 020

supersedes 7.84
company Volvo
engine TD 60 D
112 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1020	10,8+0,1	8,65-8,85	0,35(0,6)			
325	4,9-5,0	1,0-1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 5,5					ca.26	325	4,3	350	11,2+0,1
							325	4,9-5,0	500	10,8+0,1
							450-510	= 2,0	1050	10,8+0,1
ca.63 (2a)	1090-1100 = 9,8 1130-1160 = 4,0 1300 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ...: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1020	86,5-88,5 (84,5-90,5)	1090-1100*			100	min.140 (137)	325	4,9-5,0
					325	10,0-14,0 (7,5-16,5)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 6,0 L
4. Edition
En

PES 6 MW 100/320 RS 1004
RQV 300...1400 MW 7
0 420 083 003

supersedes 5.82
company: Volvo
engine: TD 60 B

1 - 5 - 3 - 6 - 2 - 4 je 60°

Testöl-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW = 10,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,8+0,1	7,55-7,75	0,35(0,6)			
300	4,7-4,9	0,95-1,35	0,35(0,55)			
1400	9,8+0,1		0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max	1400 1650	15,2-17,8 0,0-1,0				ca.9	100 300	min.6,3 4,7-4,9	300 450	1,3-1,4 2,6
ca.63	8,8 4,0	1440-1450 1530-1560				(3a)	390-450 = 2,0		1450	8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	75,5-77,5 (73,5-79,5)	1440-1450*	1400	79,0-83,0 (77,0-85,0)	100	120-130 (117-133)		
					300	9,5-13,5 (7,0-16,0)		
					100-230	(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

K2

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004
RQV 300 ... 1400 MW 27
Komb.-Nr. 0 403 446 119
1-5-3-6-2-4 = 0-60-120-180-240-300 ± 0,50° (0,75°)

supersedes 5.82
company: Volvo
engine: TD 60 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) bei RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
100	9,9+0,1	7,7-7,9	0,35(0,6)			
300	4,7-4,9	0,95-1,35	0,35(0,55)			
1400			0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max	1400 1650	15,2-17,8 0,0-1,0				ca.9	100	min.6,3		
							300	4,7-4,9		
ca.62	8,9 4,0	1440-1450 1530-1560				(3a)	390-450 = 2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	77,0-79,0 (75,0-81,0)	1440-1450*			100	120,0-130,0 (117,0-133,0)		
					300	9,5-13,5 (7,0-16,0)		
					100	-230(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 d
3. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1107
RQV 350-1200 MW 43-2
0 403 446 136 DHK: 1 688 901 016
207 + 3 bar

supersedes 9.83
company: IHC
engine: DT 466 B
132,4 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

Port closing at prestroke 4,0-4,10 (3,95-4,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,8+0,1	9,4-9,6	0,35(0,6)			
350	5,9-6,1	1,6-2,0	0,35(0,55)			
1200	11,8+0,1		0,65(0,7)			
500	10,4+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0 1500	1355-1395 0-1,0				ca.15	100 350	min.9,0 5,9-6,1		
ca.61,5 ± 2,5	4,0	1375-1385				370-650 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 94,5-96,5 (92,5-98,5)		LDA 1200	,9 bar 96,0-100,0 (94,0-102,0)	100	140-180 (137-183)		
			LDA 500	0 bar 70,0-72,0 (68,0-74,0)	350	16,0-20,0 (13,5-22,5)		
					220-280(210-290) 100(80)		Locking Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1107 mit MW 43-2	0,39	0,17 0 0,90	11,5-11,6 10,7-10,8 10,4-10,5 11,8-11,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 l/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 – 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 l/min; increase engine speed to n = 1000 l/min; then operate at idle n = 350 l/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7.6e
En 3. Edition

Testoil ISO

PES 6 MW 100/320 RS 1108
RQV 350-1200 MW 43-3
0 403 446 137
DHK: 1 688 901 016/207+3 bar
Fuel injection test tubing 1 680 750 008

supersedes
company: IHC
engine: 132,4 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,5+0,1	9,1-9,3	0,35 (0,6)			
350	6,2-6,3	1,6-2,0	0,35 (0,55)			
1200	11,5+0,1		0,65 (0,7)			
500	10,0+9,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0	1360-1400				ca.17	100	min.9,0		
	0-1,0	1450					350	6,2-6,3		
ca.60,5 ± 2,5	4,0	1380-1390				(3a)	370-650			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 850	0,9 bar 91,0-93,0 (89,0-95,0)		LDA 1200	0,9 bar 93,0-97,0 (91,0-99,0)	100	140,0-180,0 (137,0-183,0)		
			LDA 500	0 bar 60,0-62,0 (58,0-64,0)	350	16,0-20,0 (13,5-22,5)		
					220-280	(210-290)	Locking	
					100	(80)	Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1108 mit MW 43-3	0,42	0,19 0 0,90	11,1-11,2 10,3-10,4 10,0-10,1 11,5-11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7.6f
En 4. Edition

Testoil ISO 4113

PES 6 MW 100/320 RS 1108
RQV 350-1300 MW 43-4
0 403 446 138
Prüfdüsenhalterkombination 1 688 901 016
Fuel injection test tubing 1 680 750 008

supersedes _
company: IHC
engine: DT 466 B
154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	10,7-10,9	0,35(0,6			
350	6,5-6,6	1,6-2,0	0,35(0,55)			
1300	12,6+0,1		0,65(0,7			
500	9,6-9,7					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0	1440-1505				ca.16	100	min.9,0		
	0-1,0	1580					350	6,5-6,6		
ca.61,5 ± 2,5	4,0	1500-1510				(3a)	370-650			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,9 bar		LDA	0,9 bar	100	140,0-180,0		
900	107,0-109,0		1300	112,5-116,5		(137,0-183,0)		
	(105,0-111,0)			(110,5-118,5)	350	16,0-20,0		
			LDA	0 bar		(13,5-22,5)		
			500	53,5-55,5	220-280	(210-290)	Locking	
				(51,5-57,5)	100	(80)	Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

11.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
RS 1108 mit MW 43-4	0,27	0,57 0 0,90	10,4-10,5 11,9-12,0 9,6-9,7 12,6-12,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps (1) and Governors

PES 6 MW 100/320 RS 1108
RQV 350-1300 MW 45
0 403 446 140

DHK: 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes 8.83
company: IHC
engine: DT 466 B
143,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,10 (2,95-3,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,7+0,1	9,55-9,75	0,35 (0,6)			
350	5,9-6,0	1,6-2,0	0,35(0,55)			
1300	11,7+0,1		0,65(0,7)			
500	9,0-9,1					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	8,0 0-1,0	1440-1505 1550				ca. 14	100 350	min. 9,0 5,9-6,0		
ca.61,5 ± 2,5	10,8 4,0	1360-1380 1475-1485				(3a)	380-700			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)	1360-1380 *	LDA 1300	0,9 bar 99,5-103,5 (97,5-105,5)	100 305	140,0-180,0 (137,0-183,0) 16,0-20,0 (13,5-22,5)		
			LDA 500	0 bar 52,5-54,5 (50,5-56,5)	100-220(80-210)			

Checking values in brackets

* 1 mm less control rod travel than col 2

11.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
RS 1108 mit MW 45	0,20	0,57 0 0,90	9,5-9,6 11,1-11,4 9,0-9,1 11,7-11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 VOL 6,0 r
3. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1111
RSV 325-1400 MW 2 A 314
0 403 476 016

supersedes 4.85
company Volvo
engine TAMD 60 C
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,0-0,1	12,1-12,3	0,35 (0,6)			
325	5,7-5,8	0,95-1,35	0,35(0,55)			
1400	13,0+0,1					
1000	10,5+0,1		0,5((0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.22	325	5,1-5,2	350	13,5+0,1
	x = 2,75						325	5,6-5,7	500	13,0+0,1
							100	min.19,0		
ca.60 (2a)	1440-1450 = 12,0									
	1505-1535 = 4,0									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,8 bar	1440-1450*	LDA	0,8 bar	100	130,0-140,0	325	5,6-5,7
1000	121,0-123,0 (119,0-125,0)		1400	120,0-124,0 (118,0-126,0)	325	(127,0-143,0) 9,5-13,5 (7,0-16,0)		
			LDA	0 bar 83,0-85,0				
			1000	(81,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

K12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
RS 1111 mit RSV.....3i4	0,3	0,53 0 0,80	10,7-10,8 12,7-13,0 10,5-10,6 13,5-13,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 IHC 7,6 n

2. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1112
RQV 350-1300 MW 46
0 403 446 141
DHK 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes 9.83
company IHC
engine DTI-466 C
154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,5+0,1	10,3-10,5	0,35 (0,6			
350	5,4-5,5	1,8-2,2	0,35(0,55)			
1300	10,5+0,1		0,65(0,6			
500	8,4+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	8,0 0-1	1440-1505 1600	ca. 20 ± 2,5	5 2,0 8,0	595-605 435-465	ca. 14	100 350	min. 9,0 5,4-5,5		
ca.47,5 ± 2,5	4,0	1470-1480				(3a)	390-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 103,0-105,0 (101,0-107,0)		LDA 1300	0,9 bar 107,0-111,0 (105,0-113,0)	100	RW 19-21 140-180 (137-183)		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	18,0-22,0 (15,5-24,5)		
					220-280 (210-290 100 (80)		Locking Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1112 mit MW 46	0,28	0,51 0 0,90	9,0-9,1 9,9-10,2 8,4-8,5 10,5-10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6r
1. Edition
En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1112
RQV 350-1200 MW 46-3
0 403 446 163
DHK: 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes
company IHC
engine DTA-466 C
179 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,95-4,05 (3,90-4,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,4+0,1	11,9-12,1	0,35(0,6)			
350	6,2-6,3	1,8-2,2	0,35(0,55)			
1200	12,4+0,1		0,65(0,7)			
500	10,7+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) re in 10	mm 11
max.	8,0 0-1	1355-1395 1500				ca. 12	100 350	min. 9,0 6,2-6,3		
ca. 495 ± 2,5	11,4 4,0	1260-1270 1370-1380				300-450 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 119,0-121,0 (116,5-123,5)	1260-1270*	LDA 1200 LDA 500	0,9 bar 121,5-125,5 (119,5-127,5 0 bar 86,5-88,5 (84,5-90,5)	100 350 220-280 100	140,0-180,0 (137,0-183,0 18,0-22,0 (15,5-24,5) (210-290) (80)	Locking Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
RS 1112 mit MW 46-3	0	0,22 0,44 0,90	10,7-10,8 11,1-11,2 12,0-12,1 12,4-12,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve position, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- High idle n = 1375 1/min. 21.0 - 29.0 cm^3 / 1000 strokes, (20.0 - 30.0 cm^3/1000 strokes) 0.9 bar.

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 MW 100/320 RS 1112
RQV 350-1200 MW 64
0 403 446 160
DHK: 1 688 901 016/207 + 3 bar
Fuel injection test tubing 1 680 750 008

supersedes

company IHC

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,95-4,05 (3,90-4,10) mm (from BDC) RW = 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,7+0,1	10,6-10,8	0,35(0,6)			
350	5,9-6,0	1,8-2,2	0,35(0,55)			
1200	10,9+0,1		0,65(0,7)			
500	10,6+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	8,0	1355-1395				ca. 11	100	min.9,0		
	0-1	1450					350	5,9-6,0		
ca. 45,5 ± 2,5	9,9	1245-1255								
	4,0	1340-1350				③a		370-450		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA	0,8 bar	1245-1255 *	LDA	0,8 bar	100	140,0-180,0	800	11,7+0,1
800	106,0-108,0		1200	101,0-103,0		(137,0-183,0)	1200	10,9+0,1
	(104,0-110,0)			(99,0-105,0)	350	18,0-22,0	1000	11,7+0,1
			LDA	0 bar		(15,5-24,5)	1150	10,9+0,1
			500	84,0-86,0				
				(82,0-88,0)	100-220 (80-210)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1112 mit MW 64	0,23	0,35 0 0,80	10,9-11,0 11,3-11,6 10,6-10,7 11,7-11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7 t 1

3. Edition

En

Testöl ISO 4113

PE 8 MW 100/720 LS 1117
RQ 300/1000 MW 52
0 403 548 005

1-8-7-2-6-5-4-3 je 45°

supersedes 1.85
company KHD
engine F 8 L 413 F
150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,4+0,1	10,1-10,3	0,35(0,6			
300	8,2-8,3	1,1-1,5	0,35(0,55)			
1000	11,3+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
520	19,2-20,8	520	20,0	10,3	1045-1060	300	8,2	100	min.10,2	600	12,4-12,5
				4,0	1080-1110			300	8,2-8,3	1000	11,3-11,4
1200	0-1,0									650	12,4-12,5
										975	11,3-11,4

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
600	101,0-103,0 (99,0-105,0)		1000	91,0-93,0 (88,5-95,5)	100	130,0-140,0 (127,0-143,0)
					300	11,0-15,0 (8,5-17,5)
					100-230(80-250)	

Checking values in brackets

12.85

K20

Test Specifications Fuel Injection Pumps ② and Governors

Testoil-ISO 4113

PE 8 MW 100/720 LS 1117
RQ 300/1000 MW 52-1
0 403 548 009

1-8-7-2-6-5-4-3 je 45°

supersedes 1.85
company: KHD
engine F 8 L 413 FZ
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	12,6+0,1	10,6-10,8	0,35(0,6)			
300	8,1-8,2	1,1-1,5	0,35(0,55)			
1150	12,6+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,8	550	20,0	10,4	1195-1210	300	8,1	100	min.9,7	650	12,6-12,7
				4,0	1270-1300			300	8,1-8,2	1150	11,4-11,5
1350	0-1,0							350-380 = 2,0		850	12,0-12,4

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
650	106,0-108,0 (104,0-110,0)		1150	96,0-98,0 (93,5-100,5)	100	130,0-140,0 (127,0-143,0)
					300	11,0-15,0 (8,5-17,5)
					100-230	(80-250)

Checking values in brackets

12.85

K21

Test Specifications Fuel Injection Pumps ② and Governors

Test-No. 4112

PE 8 MW 100/720 LS 1117
RQ 300/1150 MW 53
0 403 548 006
1- 8- 7- 2- 6- 5- 4- 3
0-45-90-135-180-225-270-315

supersedes 1.85
company KHD
engine BF 8 L 413 FZT
206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testors

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	13,3+0,1	12,3-12,5	0,35(0,6)			
300	7,5-7,6	1,1-1,5	0,35(0,55)			
1150	12,3+0,1		0,5(0,7)			
400	12,4+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,3	1195-1210	300	7,5	100	min.9,1	800	13,3-13,4
					1230-1260			300	7,5-7,6	1150	12,3-12,4
1350	0-1,0									650	13,3-13,4

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,8 bar		LDA	0,8 bar		
800	123,5-125,5		1150	118,0-120,0	100	140,0-150,0
	(121,5-127,5)			(115,5-122,5)		(137,0-153,0)
			LDA	0 bar	300	11,0-15,0
			400	96,0-98,0		(8,5-17,5)
				(93,5-100,5)	100-230	(80-250)

Checking values in brackets

12.85

K22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution / difference mm (1)
LS 1117 mit MW 53	0,8	0,19 0,13 0	13,3-13,4 13,0-13,1 12,6-12,7 12,4-12,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 13,4d1

1. Edition

En

Testoil-ISO 4113

PE 8 MW 100/720 LS 1117
RQV 425-900 MW 66
0 403 548 013
1-8-7-2-6-5-4-3 je 45°

supersedes –
company KHD
engine F 8 L 513 0 PT.
153 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,1+0,1	10,7-10,9	0,35(0,6)			
425	5,0-5,1	1,3-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max	900 1150	15,2-17,8 0-1,0				ca.22	425 100	5,0-5,1 min.7,5		
ca.31	10,1 4,5	940-950 980-1010				450-750 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
900	107,0-109,0 (105,0-111,0)	940-950 *	550	108,0-110,0 (106,0-112,0)	100 425	130,0-140,0 (127,0-143,0) 13,0-17,0 (11,0-20,0)	900 550 700	11,7+0,1 11,6+0,1 11,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts.

12.85

Testoil-ISO 4113

PE 8 MW 100/720 LS 1117
RQ 300/1075 MW 53-1
0 403 548 008
1-8-7-2-6-5-4-3 je 45°

supersedes 10.84
company KHD
engine BF 8 L 513 T
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,4+0,1	12,3-12,5	0,35(0,6)			
300	8,0-8,1	1,6-2,0	0,35(0,55)			
1075	12,1+0,1		0,5(0,7)			
400	12,6+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,8	550	20,0	11,1	1120-1135			100	min. 9,6	600	13,4-13,5
				4,0	1155-1185			300	8,0-8,1	640	13,4-13,5
										950	12,1-12,2
1250	0-1,0									1075	12,1-12,2

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,8 bar		LDA	0,8 bar	100	140,0-150,0
600	123,5-125,5		1075	114,0-116,0		(137,0-153,0)
	(121,5-127,5)			(111,5-118,5)	300	16,0-20,0
			LDA	0 bar		(13,5-22,5)
			400	96,0-98,0		100-230
				(93,5-100,5)		(80-250)

Checking values in brackets

12.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
LS 1117 mit MW 53-1	0	0,8 0,25 0,19	12,6-12,7 13,4-13,5 13,2-13,3 12,8-12,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD13,4 a

3. Edition

En

Testöl ISO #13

PE 8 MW 100/720 LS 1118
RQV 300-1150 MW 56
0 403 548 007
1-8-7-2-6-5-4-3 je 45°

supersedes 10.84
company: KHD
engine BF 8 L 513
222 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,025) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	13,3-13,5	0,35(0,6)			
300	8,7-8,8	1,6-2,0	0,35(0,55)			
1150	13,6+0,1		0,5(0,7)			
450	13,2+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1175	15,2-17,8				ca.22	300	6,7-6,8		
	1400	0-1,0								
ca. 55	12,6	1190-1200				320-650 (3a)				
	4,0	1300-1330								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,8 bar	1190-1200*	LDA	0,8 bar	100	140,0-150,0	700	14,2+0,1
700	133,0-135,0		1150	129,0-131,0		(137,0-153,0)	1150	13,6+0,1
	(131,0-137,0)			(126,5-133,5)	300	16,0-20,0	750	14,2+0,1
			LDA	0 bar		(13,5-22,5)	1100	13,6+0,1
			450	104,0-106,0				
				(101,5-108,5)		100-230(80-250)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
LS 1118 mit MW 56	0,36	0,26 0 0,80	13,9-14,0 13,4-13,7 13,2-13,3 14,2-14,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 6,1n6

1. Edition

En

Tasqui150 4113

PES 6 MW 100/720 RS 1133
RQ 300/1325 MW 65
0 403 446 166
1-5-3-6-2-4 je 60°

supersedes

company KHD

engine BF 6 L 913 BW
124 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,50-3,60 (3,45-3,65) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1325	10,5+0,1	9,6-9,8	0,35(0,6			
300	7,6-7,7	1,0-1,4	0,35(0,5)			
850	10,5+0,1		0,35(0,7)			
500	9,1-9,2					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	19,2-20,8	700	20,0	9,5	1375-1385			100	min.8,2		
				4,0	1445-1475			300	7,6-7,7		
1550	0,1-1,0								320-450		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar	100	LDA	0,7 bar	100	120,0-140,0
1325	96,0-98,0		850	87,0-91,0		(117,0-143,0)
	(94,0-100,0)			(85,0-93,0)		
			LDA	0 bar	300	10,0-14,0
			500	47,0-49,0		(8,0-16,0)
				(45,0-51,0)		

Checking values in brackets

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
RS 1133 mit RQ..MW 65	0,45		10,2-10,3
		0,35	9,3-9,6
		0	9,1-9,2
		0,70	10,5-10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC7,6 r7
En 1. Edition

Test-No.

PES 6 MW 100/320 RS 1134
RQV 350-1200 MW 46-1
0 403 446 161
DHK: 1 688 901 016/207+3 bar
Fuel injection test tubing 1 680 750 008

supersedes
company: IHC
engine: DTA 466 (
172 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	13,2+0,1	12,05-12,25	0,35(0,6)			
350	6,8-6,9	1,8-2,2	0,35(0,55)			
1200	13,2+0,1		0,65(0,7)			
500	10,2+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	8,0 0-1	1355 1460				ca.13	100 350	min.9,0 6,8-6,9		
ca.47,5 ± 2,5	12,2 4,0	1250-1260 1395-1405				370-500 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1250-1260*	LDA	0,7 bar	100	140-180		
800	120,5-122,5 (118,5-124,5)		1200	125,5-129,5 (123,5-131,5)	350	(137-183) 18,0-22,0 (15,5-24,5)		
			LDA 500	0bar 65,5-67,5 (63,5-69,5)	100-220 (80-210)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
RS 1134 mit MW 46-1	0		10,2-10,3
		0,24	10,9-11,0
		0,52	12,5-12,6
		0,70	13,2-13,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 1/min; increase engine speed to n = 1000 1/min; then operate at idle n = 350 1/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6r6
En 1. Edition

Testoil-ISO 4113

PES 6 MW 100/320 RS 1134
RQV 350-1200 MW 46-2
0 403 446 162
DHK: 1 688 901 016/207+3 bar
Fuel injection test tubing 1 680 750 008

supersedes-
company IHC
engine DTA 466 C
156 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,2+0,1	10,6-10,8	0,35(0,6)			
350	6,3-6,4	1,8-2,2	0,35(0,55)			
1200	12,2+0,1		0,65(0,7)			
500	10,0+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	8,0	1355-1395				ca.17	100	min 19		
	0-1	1460					350	6,3-6,4		
ca.48,5 ± 2,5	11,2	1255-1265				370-500				
	4,0	1370-1380				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,8 bar	1255-1265*	LDA	0,8 bar	100	140-180		
800	106,0-108,0		1200	110,5-114,5		(137-183)		
	(104,0-110,0)			(108,5-116,5)	350	18,0-22,0		
			LDA	0 bar		(15,5-24,5)		
			500	67,5-69,5				
				(65,5-71,5)	220-280	(210-280)	Locking	
					100	(80)	Unlocking	

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel · diminution / difference mm (1)
RS 1134 mit MW 46-2	0,24	0,45 0 0,80	10,5-10,6 11,6-11,9 10,0-10,1 12,2-12,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Notes:

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Before checking the sleeve, first set locking device.
- In unlocked state do not run at greater than n = 500 l/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 - 2.0 mm before shutoff.
- Checking freedom of movement of control rod: with idle set to n = 350 l/min; increase engine speed to n = 1000 l/min; then operate at idle n = 350 l/min; the previously set idle control-rod travel must be obtained to within ± 0.1 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 FIA 13,8 v

1. Edition

En

PE 6 P 120 A 720 RS 167 RSV 350-750 P 7/377 R
Komb.-Nr. 9 400 097 201
Values only apply to test nozzle-and-holder assembly 0 681 443 022 and fuel-injection test tubing 1 680 750 026

supersedes -
company Fiat
engine 8210

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	11,8+0,1	16,4-16,6	0,6 (1,05)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca. 48	750	16,0	without auxiliary spring	ca. 27	350	7,5	730	0
	780	11,6					500	0
	810	6,2			350	7,3-7,7	400	1,2-1,8
	800	5,6-10,0			380	4,4-6,2		
	830	3,0-5,8			430	0,7-3,0		
(2a)	860	0,6-2,8	with auxiliary spring		500	0-1,0		
	910	0-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
730	164,0-166,0 (160,0-170,0)	-	-	-	100	270,0-300,0 =19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.86

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 39,8 b
3. Edition
En

Testoil-ISO 4113

(1) PE 6 P 120 A 300/3 LS 267
(2) PE 6 P 120 A 320 LS 268 RSUV 300-750 P 9 A 332/1 R
(3) PE 6 P 120 A 300 LS 330

supersedes 7.83
company Südbremse
engine D/TD/TBD 602 V 12
TBD 602 V 12 S

1 - 5 - 3 - 4 - 2 - 6 (1) /1 - 6 - 2 - 4 - 3 - 5 (2 u. 3)
0 -15 -120-135-240-255 ± 0,5° (± 0,75°) / 0 -15 -120-135-240-255 ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 806 046 (1)
0 401 876 214 (2)
0 401 816 052 (3)

A. Fuel Injection Pump Settings

Port closing at prestroke 2,3 - 2,4 (2,25-2,45) mm (from BDC) RW = 21,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
700	13,0+0,1	26,0 - 26,4 (25,7 - 26,7)	0,5 (0,9)			
300	5,5-5,7	2,6 - 3,2	0,8 (1,2)			

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 074.

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.29	300	5,1	700	13,0+0,1
	X =	5,25					100		325	14,2+0,6
ca.70 (5)	12,0	790 - 800					300	5,5-5,7	450	13,0+0,1
	4,0	815 - 845					315-375=2,0 mm			
	980	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump without (1 u. 3) and with Fitted Governor (2)

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes mm RW	rev/min	mm
1	2	3	4	5	6	7	8	9
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. Pumps (1) and (2) or (1) and (3) operate in tandem.					100	19,5-21,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.86

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 f 2
3. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 273 Y RQV 250-1100 PA 238/2 R
..RS 273-1 Y

0 401 846 379

supersedes 7.83
company: Volvo
engine: TD 100 B
220 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 - 2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,0+0,1	14,8 - 15,1	0,4(0,8)			2,5 ± 0,1 (2,2 - 2,9)
250	5,1-5,3	1,1 - 1,5	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a / 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
max.	1260	15,2-17,8	-	-	-	ca.11	100	min.6,6	350	1,7-2,3
							250	5,1-5,3	600	3,7-4,3
ca.40	9,0	1140-1150							1290	8,8
	4,0	1225-1255					310-370=2,0 mm			
	1350	0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation 2b intermediate speed 4a: rev/min 3	Fuel delivery characteristics 5a high idle speed 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery 6 idle switching point: rev/min 6	mm RW XXXXXXXXXXX 7	Torque-control 5 travel: rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 147,5 - 150,5 (145,0 - 153,0)	1140-1150*	LDA 700	0 bar 111,0-115,0 (108,0-118,0)	100	20,5-21,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS 273 Y + ..PA 238/2R	0,7		10,0 - 10,1
		0	8,2 - 8,3
		0,40	9,6 - 9,7
		0,20	8,7 - 8,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 f

1. Edition

PE 8 P 130 A 920/5 RS 293-2 RS 250/1000 P 1 A 422 R En

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 117

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113 (S)

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC); RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,5+0,1	35,8-36,1	0,6(1,0)			
250	6,1-6,3	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	FH ca.23	250	6,2	1000	13,5-13,6
	X = 5,0						400-460	=2,0	420	14,7-15,3
VH ca.5										
FH max.	12,5	1040-1050							600	13,5-13,6
(2a)	4,0	1095-1125				150-200				
	1260	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Carry out adjustment on engine		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 30,4 a

2. Edition

En

PE 12 P 120 A 920/5 RS 294 RSUV 300-750 P 9 A 322 R

supersedes 6.83

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)

company KHD

engine BA 12 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 870 049

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testöl-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
600	12,0+0,1	20,1-20,3	0,5(0,9)			
300	5,8-6,0	1,0-1,6	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 31	300	7,5	750	12,0-12,1
	X = 4,0						300	7,9-8,1	450	12,0-12,1
ca. 68 (2a)	11,0	770-780					340-400	=2,0	325	13,2-13,8
	4,0	810-840								
	950	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Carry out adjustment on engine		770-780*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 30,4f
2. Edition

En

PE12 P120 A920 RS 294 RSUV 300-1000 POA 348 R

1-10-5-7-2-11-6-8-3-12-4-9- je 30° ±0,5° (±0,75°)

supersedes 6.85 KHD
company BA 12 M 816
engine Komb.-Nr. 0 401 870 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,10 (1,95-2,15) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	31,0-31,4	0,5 (0,9)			
300	6,3-6,5	2,2-2,8	0,65(0,95)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.18	300	5,9	1000	14,9-15,0
	X=1,0						300	6,3-6,5	270	16,2-16,8
ca. 60	13,9	1040-1050					325-385	= 2,0	400	14,9-15,0
(2a)	4,0	1060-1090								
	1190	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Carry out adjustment on engine		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 30,4 d

2. Edition

PE 12 P 120 A 920 RS 294 RS 250/1000 P 17422 R

En

supersedes 6.83

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)

company KHD

engine BA 12 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 870 060

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testing data

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9	0,5(0,8)			
300	6,0-6,2	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	250	6,1	1000	14,9-15,0
	X = 5,0						250	6,0-6,2	420	16,2-16,8
ca. 58 (2a)	13,9	1040-1050					430-490	=2,0	550	14,9-15,0
	4,0	1120-1150				150-200				
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Carry out adjustment on engine		1040-1050*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 KHD 30,4 k

1. Edition

PE 12 P 130 A 920 RS 294-1 RSUV 300-600 P 8 A 322 R En

supersedes

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ± 0,5° (± 0,75°)

company KHD

engine BA 12 M 816

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 870 076

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
600	13,5+0,1	35,8-36,1	0,6(1,0)			
300	6,1-6,3	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,7	600	13,5-13,6
	X = 4,0						300	6,1-6,3	220	14,7-15,3
ca. 65 (2a)	12,5	640-650					310-370	=2,0	350	13,5-13,6
	4,0	655-685								
	820	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Carry out adjustment on engine		640-650*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2 c
2. Edition
En

PE 6 P 120 A 420 LS 324 RS 250/1000 P 1/422 R

supersedes 6.83
company KHD
engine BA 6 M 816

Komb.-Nr. 0 401 876 221, 0 401 876 217
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9	0,5(0,9)			
250	6,0-6,2	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		250	6,1	1000	14,9-15,0
	x	= 5,0					250-310	= 2,0	420	16,2-16,8
,,ica.58									550	14,9-15,0
FH voll	13,9	1040-1050				150-200				
(2a)	4,0	1105-1135								
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Carry out adjustment on engine		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2 b
2. Edition
En

PE 6 P 120 A 420 LS 324 RSV 250-1000 P7A 304 R

supersedes 6.83
company KHD
engine BA 6 M 816

Komb.-Nr. 0 401 876 226
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
750	14,9+0,1	29,5-29,9	0,5 (0,9)			
250	6,0-6,2	2,0-2,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5,5								300	16,2-16,8
							250	6,0-6,2	450	14,9-15,0
ca.67	13,9	1040-1050					345-405	= 2,0		
(2a)	4,0	1080-1110								
	1250	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5), Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
Not known. Carry out adjustment on engine		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DAF 11,6 K 18

1. Edition

En

PE 6 P 110 A 320 RS 372-1 RSV 250-1100 P 5 A 508-3

Komb.-Nr. 0 401 876 308

supersedes

company DAF

engine DKTD 1160 191 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
850	12,0+0,1	13,7-13,9	0,4(0,75)			
250	6,6-6,8	0,7-1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-0,7	- - -	ca. 21	250	6,2	850	12,2-12,3
	x = 4,25				250	6,6-6,8	400	12,2-12,4
					655-715	= 2,0	300	12,5-13,0
ca. 51 (2a)	11,0	1140-1150						
	4,0	1275-1305						
	1425	0,3-1,4						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 137,0-139,0 (134,5-141,5)	1140-1150*	LDA 600	0 bar 128,0-130,0 (125,5-132,5)	100	245,0-285,0 (241,0-289,0)	0 -	-

Checking values in brackets

* 1 mm less control rod travel than col 2

12.85

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PE 6P..RS 372-1 + RSV..P5A 508-3	0,70	0 0,30 0,26	12,0-12,1 11,4-11,5 11,8-11,9 11,5-11,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 15,2 e

2. Edition

PE 6 P 120 A 420 LS 399 RSV 250-1000 P 7 A 460 En

supersedes 6.83

company KHD

engine BA 6 M 816

Komb.-Nr. 0 401 876 236

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
750	14,9+0,1	29,5-29,9 (29,3-30,1)	0,5(0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5,75								300	16,2-16,8
							250	6,0-6,2	450	14,9-15,0
ca. 67 (2a)	13,9	1040-1050					345-405=2,0			
	4,0	1080-1110								
	1250	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ; rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	-	-	100	19,5-21,0 mm RW	-	-
Not known. Carry out adjustment on engine								

Checking values in brackets

* 1 mm less control rod travel than col 2

3.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung